THE IRON TRADE REVIEW

Volume XLII | CLEVELAND, APRIL 16, 1908 | Number 16

LARGE ORDERS

FOR STRUCTURAL MATERIAL IN CHICAGO DISTRICT.

Sheet Business Improves—Pig Iron Market Dull—Coke Production Decreased.

While there is increased activity in some lines, rail mills and other plants are not turning out such large tonnages as they did a month ago. The percentage of plants in operation has probably been reduced. Manufacturers of finished products whose prices have declined are protesting against the prevailing quotations on crude steel. Meetings of the week are expected to result in important developments concerning pig iron.

Structural Contracts

In structural material, contracts for about 12,000 tons have been placed in the Chicago territory, the principal contract being for the Corn Products Mfg. Co., involving 3,600 tons of structural steel and about 600 tons of castings, the price being $44 per ton. Although this is very low for fabricated material, there is no evidence that less than the full prices will be paid for the structural shapes. Northwestern railroads placed orders of good size for viaducts and track elevation.

Pig Iron Conditions

Present conditions in the pig iron market are far from satisfactory to the sellers. A meeting at which about four-fifths of the southern furnace capacity was represented was held last week in Birmingham, and conditions were thoroughly discussed. No conclusion was reached, and another meeting will be held in New York, Thursday, which will be attended by both northern and southern producers, and it is hoped that more harmonious relations will result. A significant fact is that a number of furnaces whose owners have been selling pig iron at very low prices have been blown out within a few days. The most important inquiry now pending for pig iron is for 12,000 tons from an interest which sells largely to railroad companies.

Sheets Are Improving

The sheet business is increasing, and there is now a fair amount of buying. The demand for tin plate is well maintained, and production is at about the normal rate. Evidences of improvement in steel bars are noticeable, especially in the Pittsburg and Chicago districts. A number of large contracts for cotton ties have been placed since the opening of the market last week. Of the 80,000 tons of rails for the New York Central lines, 31,000 will be rolled at the Illinois Steel Co. mills. Rail orders for the week have been very light. The order for 55,000 tons for the Pennsylvania System is still held up pending an agreement of the company and the mills concerning specifications.

Reduced Coke Production

Only about 26 per cent of the ovens in the Connellsville region are now in operation, and production is about at the lowest point of the year.

A Positive Denial.—Concerning rumors which have been published in New York and elsewhere about the alleged negotiation of a deal for the purchase of the properties of Corrigan, McKinney & Co., by the Oliver Iron Mining Co., Price McKinney authorizes THE IRON TRADE REVIEW to say that there is absolutely no foundation, as no negotiations of any kind have been, are now, or are expected to be pending between Corrigan, McKinney & Co., and the United States Steel Corporation, or any of its constituent companies.

SEVERE TESTS

FOR STEEL RAILS DEMANDED BY THE PENNSYLVANIA.

New Specifications Which Mills Have Not Yet Accepted Are Made Public by the Company.

The tests outlined in the new steel rail specifications prepared by the Pennsylvania system are unusually severe and depart from these provisions in the specifications of the American Society for Testing Materials, the American Society of Civil Engineers and the specifications adopted last December by the manufacturers of Bessemer steel rails. One clause which is objectionable to the manufacturers follows:

"If a test piece breaks without showing physical defect, all rails made from that heat shall be rejected absolutely."

All other specifications heretofore adopted provided that, if any rail breaks when subjected to the drop test, two additional tests could be made of other rails from the same blow of steel, and if either of these latter tests failed, all of the rails of the blow which they represent will be rejected; however, if the additional test pieces meet the requirements, all the rails of the blow which they represent will be accepted. The Pennsylvania specifications, however, make this exception: If a test piece broken under test shows a physical defect, the top rail from each ingot of that heat shall be rejected and a second test shall then be made of a test piece selected by the inspector. If the second test piece breaks, the remainder of the rails of the heat shall be rejected. However, if the second piece does not break, the remainder of the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection is less or more, respectively. Furthermore, if the test piece referred to does not break, but when tested to destruction

(Continued on page 710.)

THE WEEK IN IRON CENTERS

PITTSBURG.

Some Indications of Slight Improvement—Few Sales of Pig Iron.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., April 14.

As the second quarter of the year advances, it is becoming more and more apparent that those of the iron and steel trade who had looked to the spring season to bring about a material recovery of normal conditions have estimated too lightly. That substantial gains have been recorded and are being maintained in some finished lines, can be readily seen and this is encouraging as far as it applies. Other products, however, are showing a slowness to respond to the efforts of manufacturers to stimulate them, and, as a result, the general situation has assumed a spotty aspect that affords doubt to some and the occasion to others for the questioning of present policies.

It would seem to be patent, therefore, that sufficient time has not yet been given the trade to adjust itself to the new order of things or to permit the elimination of those factors dealing with the public at large and, to a great extent, of a financial and sentimental order, that are restraining elements in the present market. It is the general opinion of iron and steel makers that this process must run its length before normal conditions are re-established and that patience as well as faith are necessary qualities. Pending the development of this movement toward rejuvenating the industry, it is believed if the market continues free of the demoralizing influences of the past, and is well maintained on a slowly rising basis, as at present, that this in itself may be regarded as a source of gratification and of sound faith. It cannot be truthfully said that the general market structure is losing ground, nor may it be said that it is advancing in a marked degree, but it can scarcely be questioned that it is directed in the right way.

The week has developed a better sentiment in steel bars, which may be regarded as one of the barometers of the entire industry. Reports, particularly from the west, indicate more satisfactory prospects and there are other indications of mild improvement. The condition of sheets also continues to improve and structural material is moving a little more freely. Tin plate is being maintained on practically a normal basis, while wire is quite satisfactory and merchant pipe is steady. Semi-finished steel is generally dull and other lines exhibit no material changes.

Foundrymen are reported to be moderately more optimistic, although casting business has not grown in a marked degree. Inquiries are better and the same statement may be applied to machinery makers in this district, as a very fair amount of equipment installation is now in the preliminary stages of negotiation.

Pig Iron.—Scattering sales in small tonnages, a better inquiry and a dull undertone that is giving rise to frequent reports of prices considerably below the prevailing quotations, represent the present pig iron market. There is a source of encouragement to sellers in the appearance of a fairly consistent inquiry for foundry iron for third quarter and last half, although some interests prefer to take their chances with the future and are not inclined to sell so far ahead at the present prices. The generally-quoted price on No. 2 foundry iron remains $15.50 valley furnace or $16.40, delivered Pittsburg, but this figure is known to have been shaded on firm offers and some furnaces have quoted $15.25 on small lots. We note the sale of a small tonnage in the current week, with a rather low silicon content at $15 valley. A number of sales of No. 2 ranging from carloads to 250 tons, the latter to go east, were made at $15.50 furnace. A transaction of 300 tons of a No. 2 grade especially desired by the melter brought a considerably higher price. For third quarter and last half, there are inquiries for No. 2 aggregating more than 5,000 tons, in addition to a sounding of the market by some large eastern melters. Bessemer demand is still in the shape of small needs and we note the sale of 50 tons at $16.60 valley and 100 tons not to this district at $16.75, valley, in the week. The inquiry is light. Little activity in basic is reported and the market is from $15.25 to $15.50, furnace. No basic is now being made in the valleys, as, of the five furnaces in blast, three, Shenango No. 3, Tod, of the Youngstown Steel Co. and Canal Dover, are on Bessemer, and Girard and Andrews & Hitchcock on foundry. In the week ending April 11, Bessemer and basic stocks in the valleys were diminished by about 10,000 tons over current production of about 7,000 tons of these grades. Almost all of this iron went on old contracts and of the 52,000 estimated to remain as stocks in the valleys, practically all of it is held under contract. The present stocks are about equally divided between Bessemer and basic. Among other furnaces, Josephine, of Corrigan, McKinney & Co., has gone out and Nittany has been banked.

The southern market continues at about $12 Birmingham. We note the sale of about 600 tons in various amounts, to Northern Ohio foundrymen this week at this price. We also note the sale of 300 tons of southern gray forge iron to an Ohio consumer at $10.50 Birmingham. On prompt and second quarter delivery iron, we quote as follows:

Bessemer, valley	$16.60 to 18.00
Bessemer, Pittsburg	17.50 to 18.90
No. 1 foundry, Pittsburg	17.00 to 17.50
No. 2 foundry, Pittsburg	16.25 to 17.00
Gray forge, Pittsburg	15.40 to 15.90
Basic, valley	15.25 to 15.50
Basic, Pittsburg	16.15 to 16.40

Ferro-Manganese.—The ferro-manganese market is no stronger, and we note the sale of several carloads in the week at $44, delivered Pittsburg, for immediate shipment, or about $42 Baltimore. For future delivery prices are higher. Several local consumers have been sounding the market on forward material, but no business has yet resulted. We quote 80 per cent ferro-manganese, for prompt shipment from European ports, at $44 to $45 Pittsburg. Imported 50 per cent ferro-silicon is quoted $78 Pittsburg on forward deliveries; domestic 12 per cent, $29; 11 per cent, $28; 10 per cent, $27. The lower grades of imported ferro-silicon are quoted 50 cents lower. These quotations are applicable to Pittsburg territory.

Plates.—Enough small order business is being taken to maintain present mill operations, but there are no immediate prospects of any substantial gains in this direction. Prices are reported by the leading makers to be firmer now than they have been for some time past, and little shading is encountered. The La Belle Iron Works, Steubenville, expects to start its new three-high, 72-inch plate mill next week, as a trial, and it will be continued in operation as long as conditions justify. We continue to quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.70c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary fire-box steel plates, 0.20; still bottom steel, 0.30c; marine steel, 0.40c; locomotive fire-box steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30

inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—Sheet business is slowly but surely increasing, and this tendency of the market is viewed by producers with satisfaction. There is considerable buying for stock, as tonnages in jobbers' hands are low. Galvanized sheets in particular are showing activity, and some mills report some increase in the demand for corrugated sheets, due to better structural conditions. Refrigerator manufacturers are expected to shortly enter the market for their requirements. The mill operations of the American Sheet & Tin Plate Co. were increased this week to 55 per cent against 50 per cent last week, by the starting of additional mills at the Woods works, McKeesport. The Allegheny Steel Co. put on seven mills at its Brackenridge plant this week. The La Belle Iron Works is operating four sheet mills and its galvanizing department. We continue to quote:

Black steel sheets, one pass, cold rolled: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.60c; No. 30, 2.70c. Galvanized, Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 3.95c. Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Tin Plate.—The demand for tin plate continues to run about normal and conditions are very satisfactory to manufacturers. The leading producer is operating this week on the same basis as last week, about 81 per cent, which is practically a normal activity. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—No material developments are reported in the rail situation this week, although the Baltimore & Ohio railroad and other lines continue to negotiate for their requirements with the local maker. It is expected that some contracts will be closed with leading systems within the next 30 days. Sales of the Carnegie Steel Co. for the week, included 3,000 tons of standard sections in miscellaneous lots, and 800 tons of light rails. Mills Nos. 1, 2 and 3 at the Edgar Thomson works will be started again this week, but their maximum output will not be made, as they will still be gaited. Enough tonnage is booked to insure their continued operation for sometime. Rerollers are shading schedule prices on rails rolled from billets. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—Though there is a little more inquiry for billets and less talk of any price concessions through brokers or by conversion deals, billet business continues very light. Sheet and tin bars are fairly active. Some sales are being made, but the movement is largely by specifications against old contracts.

We continue to quote Bessemer and open-hearth billets $28 Pittsburg and forging billets at $30 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $29.50 Pittsburg, valley and Wheeling territory, and $29 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—Some large contracts for cotton ties have been placed in the current week, following the opening of the market a week ago. No estimate of the season's movement has as yet been made, although it is expected to fully equal last year. Crop conditions are reported to be good. Owing to the sound conditions in the cooperage trade, hoops are being taken in good tonnage. Bands are not so active. Prices are firm. We continue to quote the following official prices:

Cotton ties, 85c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 88c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel.

Merchant Bars.—An improved sentiment in steel bars is noticeable, sales representatives of the leading producers reporting better prospects, especially in the west. Jobbers who had big stocks on hand when the slump in demand came have worked off much of this tonnage and are specifying more freely. Implement people are also taking more tonnage. Nut and bolt makers are consuming steel bars sparingly. Contracts in bar iron taken before the recent advance in prices are being specified against, but new business is light. Shafting prices are more steady. We continue to quote:

Common iron bars, 1.50c Pittsburg in carload lots and over; 1.50c in less than carloads; 1.47c to 1.50c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.60c; plow and cultivator, 1.60c; channels, angles, zees, tees, under 3 inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 56 per cent in carloads, and 52 per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by 1½ inches and over, 1.60c base. All tire subject to ½ extra on the steel card.

On cold rolled strip steel, widths 1½ inch and wider and 0.100 inch and thicker, we quote base prices per 100 pounds, $3.60 on hard and $3.75 on soft.

Structural Material.—More inquiry has come out for structural and though this continues to be generally in small amounts, there is satisfaction expressed that a greater proportion of these preliminary steps is being carried through to the contracting stage. Conditions are by no means at the point usually expected at this time of the year, but the situation is, nevertheless, more encouraging. The willingness of fabricators to accept low prices for their work is still apparent. Bids for furnishing the 14,000 tons of steel required in the erection of the P. & L. E. bridge at Beaver, Pa., were taken April 11. The Bollinger-Andrews Construction Co., Pittsburg, will furnish 1,000 tons for the new distillery of the Large Distilling Co., Pittsburg. Industrial construction is displaying a moderate increase in activity. Prices are reported by the principal manufacturers of structural steel to be very firm. We continue to quote:

Beams and channels, 15 inches and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.75c; angles from 3 to 6 inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.70c base.

Merchant Pipe.—Although the spring trade in merchant pipe is appearing slowly, there is a fair amount of business being distributed among the leading producers and independent mills. Large projects are still the exception, but several line inquiries of good size are now under negotiation. Some activity in buying is reported from the Pacific coast. Mill operations show little change. Prices on both iron and steel pipe are being maintained. We continue to quote the following official discounts to consumers in carload lots with an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	65	49	63	..
⅜ inch	67	53	65	51
½ inch	69	57	67	55
¾ to 6 inches.....	73	63	71	61
7 to 12 inches.....	70	55	68	53
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	58	46	56	44
½ to 4 inches.....	65	53	63	51
4½ to 8 inches.....	61	49	59	47
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inches.....	54	43	52	41

Boiler Tubes.—The trade in boiler tubes is very ordinary, but prospects are fair and manufacturers are not discouraged. Makers' prices are firm. We quote the following discounts:

	Iron.	Steel.
1 to 1½ inch.....	42	47
1¾ to 2¼ inch.....	42	59
2½ inch	47	61
2¾ to 5 inch.....	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Wire Products.—The wire trade is maintaining small gains from week to week, and the tonnage going to consumers is comparatively large. Jobbers and manufacturers, however, are specifying cautiously against contracts for stock, and are giving attention to immediate needs. Wire producers are holding a firm front in the matter of prices. We quote:

Wire nails, jobbers' carload lots, $2.05; retailers' carload lots, $2.10; less than carloads, $2.15; painted barb wire, $2.20 for jobbers in carloads; retailers in carloads, $2.25; and less than carloads, $2.35, with 30c for galvanizing; plain wire, 1.90c for jobbers, and 1.95c by carload.

Wire Rods.—No new business of any magnitude is being taken in rods, and the activity in this line is by orders on contracts. We quote nominally, $35 Pittsburg and $36 Pittsburg on open-hearth rods.

Coke.—Coke production in the Connellsville district is now at about the lowest point of the year, curtailment of operations having been marked. Through private sources, it is estimated that but a little over 26 per cent of the ovens in the district were in blast last week. There is a little more activity in foundry coke and some consumers are taking advantage of the low prices and are buying in limited amounts for as far as a year ahead. Furnace coke is quiet, although several furnaces are figuring upon their requirements with expectations of resuming soon. We note the sale of 60 cars of West Virginia furnace coke, for delivery up to July, at $1.50 ovens. Both furnace and foundry cokes are varying widely as to price according to grade, but for standard Connellsville foundry coke, for any delivery, we continue to quote $2.25 to $2.50 ovens and for standard Connellsville furnace coke for prompt or future delivery at $1.65 to $1.75 ovens.

Old Material.—A complete absence of activity characterizes the old material market and buying and selling are at a minimum. The scrap being produced by the mills is not being sold, in many cases, but is being piled in yards in the expectation that it will bring better prices later. The B. & O. railroad has out a list of about 8,000 tons which will be closed soon. Prices are nominal and we continue to quote:

Heavy melting scrap, $12.50 to $13; re-rolling rails, $14 to $14.25; bundled sheet scrap, $9 to $9.50; iron axles, $18.50 to $19.50; old iron rails, $15 to $16; No. 1 wrought scrap, $13.50 to $14; old car wheels, $14 to $14.50; low phosphorus scrap, $15.50 to $16; machine shop turnings, $8.25 to $8.75; cast borings, $7.75 to $8.25; No. 1 cast scrap, $14.50 to $15.

CHICAGO.

Large Contracts for Structural Material—Pig Iron Conditions Unsatisfactory.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, April 14.

The buying of structural material, though moderate as compared with normal conditions, was easily the most active branch of the week's market. More than 12,000 tons was placed, of which 4,200 was for the Corn Products Mfg. Co., 4,800 tons for two western railroads and the remainder largely for new buildings. Interest in billets, plates and bars is almost entirely wanting. Some few rails of standard section were bought and a large tonnage for the New York Central system was apportioned to the local mill of the leading interest. Merchant pipe business is improving in volume and wire products are still hovering around the high point. The price of shafting has been lowered slightly. Pig iron is a doubtful asset and the scrap market suffers from chills and fever at the mere prospect of a sale.

Freight Rates. — The following freight rates are in force on iron and steel products delivered at Chicago: On pig iron, per ton, from the valley, $2.40; from Pittsburg, $2.80; from Birmingham, $4.35; from Michigan points for charcoal iron, $1.50; from Virginia, $3.20. On billets and rods, per ton, from Pittsburg, $3. On iron and steel, merchant bars, structural steel, plates, rails and wire products, 18 cents per 100 pounds, for carload lots and 21 cents for less than carload lots. On coke, from Connellsville, $2.65.

Pig Iron.—From every standpoint the pig iron market is decidedly unsatisfactory. The tonnage situation is without change and scarcely more than 3,500 tons was sold in this territory last week. Everyone knows what the exact trouble is and no one knows the cure. One of the stacks of the Northwestern Iron Co. at Mayville was blown out last week, which leaves but two active furnaces in the Chicago district. Locally the question of price on northern iron must soon settle itself, if it is not already. The high phosphorus iron made at Mayville is being sold to compete with southern iron, but aside from this northern No. 2 has not been sold for less than $17 furnace and offers of tonnage at less than this price have been repeatedly turned down. The southern situation is clearly the element of uncertainty in this market at present. Birmingham quotations for No. 2 continue to rule at $12 and it is decidedly the exception when a better price is obtained. Yet $12 has been shaded and it is the well-defined impression that any attempt to hold at any level, whether it be $12 to $13, simply makes an opportunity for other interests to beat the market and every consumer is waiting for a chance at the best price. What that best price will be in dollars and cents is not so important as the fact that it is the best price. There is considerable inquiry for iron for shipment during the rest of the year, but furnaces refuse to book tonnage for future delivery at ruling prices.

Lake Superior Charcoal.....	$21.50 to 22.00
Northern Foundry No. 1	17.95 to 18.35
Northern Foundry No. 2	17.35 to 17.85
Northern Foundry No. 3	16.85 to 17.35
Southern Foundry No. 1	16.95 to 17.35
Southern Foundry No. 2	16.35 to 16.85
Southern Foundry No. 3	15.85 to 16.35
Southern Foundry No. 4	15.35 to 15.85
Southern No. 1 Soft.....	16.85 to 17.35
Southern No. 2 Soft.....	16.35 to 16.85
Southern Gray Forge.....	15.35 to 15.85
Southern Mottled	15.10 to 15.60

Southern Silveries, 4 per cent Silicon	18.85 to 19.35
Southern Silveries, 5 per cent Silicon	19.35 to 19.85
Southern Silveries, 6 per cent Silicon	20.35 to 20.85
Jackson Co. Silveries, 6 per cent	21.90 to 22.40
Jackson Co. Silveries, 8 per cent	23.90 to 24.40
Jackson Co. Silveries, 10 per cent	25.90 to 26.40
Malleable Bessemer	18.00 to 18.50
Standard Bessemer	19.40 to 19.90
Alabama Basic	17.35 to 17.85

Billets and Rods.—The interest in billets shows absolutely no increase and the very few inquiries that develop are for exceedingly small lots. We quote for Chicago delivery, rolling billets, $29.50; forging billets, $31.50. The situation as regards wire rods is much the same and we quote, f. o. b. Pittsburg, Bessemer wire rods $35, open-hearth $36, chain rods $37.

Merchant Bars.—Evidences of the gradual improvement in the volume of bar iron specifications may be found in the more continuous operation of some of the mills of this district. As compared with 60 days ago, decided gains have been made, and it is also noteworthy that orders and specifications are now being received, in small volume to be sure, for shipment in April, May and June. A very large tonnage of steel bars was offered, it is understood, but differences in the matter of price prevented the placing of the business. Flats and rounds from store are moving with moderate activity, but the general demand is very limited. The shafting price has been reduced and we have revised our quotations. We quote for mill shipment, Chicago delivery, as follows:

Bar iron, 1.65c to 1.68c; soft steel bars and bands, 1.78c, half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base tire card; iron finish, 1½ x ½ inch and larger, 1.78c base, steel card; channel for solid rubber tire, ¾ to 1 inch, 2.28c, and 1⅛ inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 1.93c; cutter shoe, 2.36½c; toe calk steel, 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.10c, full extras; soft steel bars, $2 per 100 pounds base, plus half extras; soft steel hoops, 2.40c; full extras.

Plates. — Individual contracts for plates in anything like important quantities are entirely lacking. There is neither increase nor decrease in appreciable quantity. Plate girders and material for tank construction together with odds and ends for a variety of uses constitute almost the entire outlet for the plate mill product. We quote:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.88c to 1.91c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2.10c to 2.20c; from 72 to 96 inches wide, 2.20c to 2.30c; 3/16-inch up to and including 60 inches wide, 2.20c to 2.25c; 72 inches wide, 2.45c to 2.55c. No. 8 up to 60 inches wide, 2.20c to 2.25c. Flange and head quality, 25c extra.

Sheets.—The consumption of sheets in this territory remains on about the same level as elsewhere and it is estimated that about 50 per cent of the normal output is being rolled. Prices are unchanged and we quote for Chicago delivery from store:

No. 10, 2.20c to 2.25c; No. 12, 2.25c to 2.30c; No. 14, 2.30c to 2.35c; No. 16, 2.40c to 2.50c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, Nos. 10 to 16, 3.05c to 3.15c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c. For mill prices see Pittsburg report.

Structural Steel. — Contracts for more than 12,000 tons of structural material were placed in this territory in the past week. Greatest interest centered in the tonnage for the Corn Products Mfg. Co., which involved approximately 3,600 tons of structural steel and about 600 tons of castings for columns. This aggregate tonnage was placed with Vierling, McDowell & Co. at the flat price of $44 a ton. While this is undoubtedly the lowest price which has been made on fabricated material, the character of the work, including the cast iron columns, permitted all of the bidders to make low figures and there is no reason, therefore, for believing that any less than the full price is to be paid for the plain structural shapes. However, it is unnecessary to state that the Corn Products Mfg. Co. will receive the benefit of some very close figuring. The Chicago, Milwaukee & St. Paul and the Chicago & Northwestern railroads are continuing to buy and the former placed an order for 1,800 tons for two viaducts on the Pacific extension and the latter 3,000 tons for track elevation, both of which contracts went to the McClintic, Marshall Co. The 3,000-ton order was placed at 2.30c Pittsburg. The St. Paul also bought 600 tons of turntables which order was split up among the Whiting Foundry & Equipment Co., Minneapolis Steel & Machinery Co. and the Chicago Bridge & Iron Works. The St. Paul is in the market for another 750 tons of structurals for the coast work. The contracts for the steel for the Boley building in Kansas City, 650 tons, will be filled by the Kansas City Structural Steel Co. Steel for the Leary building in Seattle, Wash., amounting to 1,000 tons and for the Equitable building in Birmingham, Ala., involving 1,500 tons will be furnished by the American Bridge Co. Following the withdrawal of the bid of the Morava Construction Co. on the Skaggit river bridge in Washington, the price of the American Bridge Co., the next bidder, has been accepted and the contract will undoubtedly follow. The tonnage was about 200.

Notwithstanding many reports, there is no verification of cutting prices on structurals by any of the leading producers and we quote:

Beams and channels, 3 to 15 inches inclusive, 1.88c to 1.91c delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles, over 6 inches; $2.15 per 100 pounds, base; beams, 3 to 15 inches inclusive, $2.05 per 100 pounds base; channels, 3 inches and larger, $2.05 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—It has been given out that of the 80,000 tons of rails for the New York Central lines, 31,000 tons will be rolled at the Illinois Steel Co. mills. This mill is very well situated in the matter of tonnage now and will be able to take care of itself until well past midsummer. Some light rails are being sold all the time, but the demand is weak and erratic. Prices on light rails are irregular. Prices quoted below are for rails rolled from billets. In competition with rails from rerolling stock, concessions of as much as $4 a ton have been made. We quote as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound, $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.65c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.30c to 2.40c; with hexagon nuts, 2.45c to 2.50c. Small railroad and

square boat spikes, 1.90c base, f. o. b. Pittsburg.

Merchant Pipe and Boiler Tubes.—A sound improvement which bids fair to develop some lasting qualities is observable in the tubular trade. Store prices on merchant pipe are slightly stiffer and jobbers are buying more frequently if not in larger quantities.

We quote mill discounts, Chicago delivery, carload lots, as below. On steel pipe jobbers are allowed a concession of one point and 5 per cent additional from the schedule in force:

	—Steel— Black.	Galv.
¼ to 6 inches, inclusive....	71.2	61.2

BOILER TUBES.

	Steel.	Iron.	Seamless.
2¼ to 5 ins., inclusive..	63.2	50.2	49.2

Mill quotations on iron pipe are five points higher than the foregoing prices.

We have revised our prices from store, as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch	64	48
⅜ inch	66	52
½ inch	68	56
¾ to 6 inches	71.5	62
7 to 12 inches	68	53

Store prices for wrought iron pipe, carload lots, from Chicago stocks, are as follows: One-eighth to ¼-inch, 59; ⅜-inch, 61; ½-inch, 63; ¾-inch to 6 inches, 68; 7 inches to 12 inches, 65. Boiler tubes from store are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	35	35	35
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	35
2¾ to 5 inches	60	47½	47½
6 inches and larger	50	35	..

Cast Iron Pipe.—During the past week, no contracts of importance were let though an aggregate of about 1,000 tons was placed. Prices feel the influence of the pig iron situation, but remain unchanged from a week ago, and we quote 4-inch pipe to 6-inch, $27; 6-inch to 16-inch, $26; larger sizes, $25. Gas pipe $1 a ton higher.

Wire Products.—The demand for barb wire and wire cloth is still very satisfactory. Comparatively speaking, the demand for wire nails has not been so great, though this product will reach its maximum output in this month. We quote to jobbers for Chicago delivery as follows:

Wire nails, $2.23; painted barb wire, $2.38; galvanized barb wire, $2.68; smooth annealed wire, $2.08; smooth galvanized wire, $2.38; polished staples, $2.23; galvanized staples, $2.63. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

Coke. — The foundry demand for coke has improved slightly, if there has been any change at all, but the bulk of business is going at bottom prices. We quote standard Connellsville furnace coke $1.75 at the ovens and foundry coke $2.25.

Old Material.—The market for scrap is in such shape that every sale affects the price of the material handled. Whatever movement takes place is confined almost entirely to the dealers. In general there is little demand for mill and foundry scrap and prices are correspondingly weak. Steel scrap is more steady and during the past week has been supported by a fair amount of inquiry. The rolling of the steel reinforcing bars for the Corn Products Mfg. Co. will require the buying of a fair tonnage of rerollers from which they will be made and, in addition, there has been sufficient demand in other quarters to stiffen the price. Rerolling rails sold by the railroads in the past week brought $13, it is reported. The only offering of scrap this week was a small list of 400 tons by the St. Louis & Southwestern. We have revised our prices and quote, gross tons in the first paragraph, as follows:

Old car wheels	13.00 to 13.50
Old iron rails	15.00 to 15.50
Re-rolling rails (3 ft. and over)	13.00 to 13.50
Old steel rails (3 ft. and under)	12.25 to 12.75
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	11.50 to 12.00
Heavy melting steel	11.00 to 11.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Knuckles, couplers and springs	11.00 to 11.50
Shafting	14.00 to 14.50
Iron car axles	16.00 to 16.50
Steel car axles	15.00 to 15.50
Dealers' forge No. 1	9.00 to 9.50
Pipes and flues	7.75 to 8.25
No. 1 cast, 150 lbs and less	12.00 to 12.50
No. 1 mill	6.75 to 7.25
Mixed busheling (Nos. 1 and 2)	7.00 to 7.50
Country sheet	5.25 to 5.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	10.00 to 10.50
Cast borings	4.50 to 5.00
Mixed borings, etc	4.75 to 5.25
Machine shop turnings	6.00 to 6.50
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.50 to 10.00
Stove plate and light cast scrap	9.50 to 10.00
Old iron splice bars	13.50 to 14.00

CLEVELAND.

Open Shop on the Lakes—Very Light Inquiry for Pig Iron.

Office of THE IRON TRADE REVIEW, Browning Building, April 14.

Iron Ore.—The most important development of the week was the declaration of the Lake Carriers' Association in favor of the open shop principle on the lakes. While there have been some mutterings about a possible strike on the part of union labor leaders, a large number of engineers have already made independent contracts with their employers, and there is a good prospect that vessels will be freed from union domination without serious conflict. Wages will remain the same as last year. On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51.50 per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20; and Mesabi non-Bessemer, $4.

Pig Iron.—Very few inquiries are pending and orders placed have been for very small tonnages. The fact that one large interest which has been naming low quotations has blown out its furnace indicates that the low price policy has not resulted in much business. A few foundrymen have manifested a disposition to buy, if they could do so at about $15 Cleveland, but $15 valley seems to be the bottom price at present for No. 2 foundry. Few founders have any considerable iron on hand, and many will be compelled to buy at least in small quantities before long. For Cleveland delivery, we quote as follows:

Bessemer	$17.00 to 17.50
No. 1 foundry	16.50 to 17.00
No. 2 foundry	16.00 to 16.50
No. 3 foundry	15.00 to 15.50
No. 2 southern	15.85 to 16.35
Gray forge	14.50 to 15.00
Lake Superior charcoal	21.00 to 22.00

Coke.—Some inquiries for future delivery are pending, but very few sales are being made. We quote furnace coke at $1.60 to $1.70 ovens, and foundry coke at $2 to $2.50.

Finished Material.—The market is extremely quiet, although specifications show a slight improvement. Some of the less important plate manufacturers are cutting prices on narrow widths. Bar iron quotations are irregular, but the usual price is 1.40c at the mill and 1.80c from stock, the latter quotation being shaded on desirable business. Jobbers have recently reduced prices on bars and other products sold from stock. The Van Dorn Works has obtained a contract for a railroad viaduct at Alliance, O., which will be erected at a cost of about $100,000.

Old Material.—The dullness that has overhung the market for the past several weeks has not lifted appreciably, and yet it is apparent that there is a stronger undertone to what might have appeared a somewhat weak market. Extensive offerings of railroad material have carried down some lines. Still, the resulting business has not been of the volume hoped for.

Local consumers, in common with those of the Cleveland district generally, were not large takers of material on old contracts the past week. The following revised prices, f. o. b. Cleveland, are still largely nominal:

Old iron rails	15.00 to 15.50
Old steel rails (re-rolling)	13.00 to 13.50
Old steel rails (under 6 feet)	12.25 to 13.25
Old car wheels	12.50 to 13.00
Old steel boiler plate	9.00 to 10.00
Steel axles	14.50 to 15.00
Malleable iron (railroad)	12.25 to 13.25
Malleable iron (agricultural)	10.25 to 11.25
Heavy steel	11.25 to 12.25
Country mixed steel	11.00 to 11.50
Low phosphorus	13.50 to 14.00

We quote, net tons, as follows:

No. 1 R. R. Wrought	11.50 to 12.00
No. 1 busheling	10.00 to 10.50
No. 1 machine cast	12.00 to 12.50
Iron axles	16.00 to 17.00
Axle turnings	7.00 to 7.50
Machine shop turnings	6.00 to 6.50
Grate bars	9.25 to 10.25
Pipes and flues	9.50 to 10.50
Tank iron	8.25 to 9.25
Hoop and band iron	5.25 to 6.25
Sheet iron	4.25 to 5.25
Wrought drillings	6.00 to 6.50
Stove plate	10.25 to 11.25
Cast borings	4.75 to 5.75

NEW YORK.

Inquiry for Large Pig Iron Tonnage —Contract for Corn Products Building.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., April 14.

Pig Iron.—The current week opens with the largest inquiry of the year in circulation. The American Brakeshoe & Foundry Co. is asking for tenders on 12,000 tons, equally divided among No. 2 and No. 3 foundry and gray forge, half for the Buffalo plant and half for that at Mahway. It is understood that this inquiry was put out at the instance of the company's directors who are to meet during the week to consider the prices made. In view of the admittedly light business of railway equipment interests generally, this development was entirely unexpected and is attracting wide attention. Although actual business continues very light, there are other indications that certain large manufacturing concerns are coming around to the idea that present prices are near rock bottom and that nothing is to be gained by delaying purchases any longer. Aside from the inquiry noted above, which is understood to be for delivery running six months ahead, a Newark foundry is in the market for from 600 to 1,000 tons, a Paterson interest wants another 1,000 tons, and several good inquiries are current in the Boston and Philadelphia district. Considerable comment has arisen over the statement of two local shipping concerns that vessel room has been chartered with them for 150,000 tons of iron from Alabama and Florida points to Genoa, Italy. The explanation generally accepted is that some such freight tonnage may have been optioned for use in case price adjustments later on may render the exporting of southern iron profitable. No further foreign sales have been made since the 3,000 tons originally reported and on a part of this delivery has been delayed. So far as can be estimated, northern stocks are not increasing, the policy being to blow out stacks rather than permit this. We quote, tidewater prices, as follows:

Northern foundry No. 1	$18.00 to 18.75
No. 2X foundry	17.50 to 18.50
No. 2 plain	17.00 to 18.00
No. 2 southern foundry	16.25 to 16.75
Malleable	17.75 to 18.25
Basic	17.00 to 17.50
Gray forge	16.50 to 17.00

Ferro-Manganese.—Scattered buying by a considerable number of small consumers is reported, with a wide range in prices. One eastern interest is asking tenders on about 600 tons for delivery running through the year and certain producers decline to quote for such advanced shipment at the present low level. We quote, early delivery, at $42.50, seaboard. An eastern mill is preparing to make the experiment of rolling manganese rails.

Finished Materials—The steel for the Stuyvesant Realty Co. apartment house at Fifty-eighth street and Seventh avenue will be furnished by the Easton Foundry & Machine Co., about 1,300 tons being required. There is a chance that the Whitehall extension, calling for some 15,000 tons, will not be erected for a considerable time. Rail sales of the week amounted to 3,500 tons.

The Corn Products building project has finally been let to the Vierling & McDowell Co., of Chicago, about 4,500 tons being involved. The American Bridge Co. has taken a number of small bridges for the Lackawanna. Cast iron pipe business is at a standstill.

Bar iron is possibly a little more firm, though no large tonnages are going at any price. Other lines manifest little change. We quote: Angles, 3 to 6 inches x ¼ inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼ inch and heavier, 1.91c; plates, carloads, tanks, 1.86c; marine boilers, 2.26c; bar iron, 1.56c; soft steel bars, 1.76c; sheets, No. 28, black, 2.66c.

Old Materials.—Railway lists of eastern roads were well taken up, the price level being at least equal to that of March and in some items, notably railroad wrought, 50 cents higher. Generally, however, there is little activity in the market and the feeling prevails that some lines of scrap will go slightly lower before rock bottom is reached. We quote, gross tons, New York prices, as follows:

Old iron rails	$15.50 to 16.00
Old steel rails, re-rolling	14.50 to 15.00
Relaying rails	20.00 to 21.00
Old car wheels	14.00 to 14.50
Old iron car axles	17.00 to 17.50
Old steel car axles	15.50 to 16.00
Heavy melting steel	11.00 to 11.50
No. 1 railroad wrought	13.00 to 13.50
Iron track scrap	11.50 to 12.00
Wrought pipe	9.00 to 9.50
Cast borings	5.00 to 5.50
Wrought turnings	7.50 to 8.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Stove plate	9.50 to 10.00
Grate bars	9.50 to 10.00

CINCINNATI.

Few Developments in Pig Iron—One Large Inquiry Pending.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., April 14.

Pig Iron.—The week has been quiet with no material change in the situation. Southern pig iron is quoted freely at $12 Birmingham and there continue to be persistent rumors of $11.50 having been done, but selling agencies are unwilling to admit ability to quote the lower figure. Northern iron prices so far as southern Ohio is concerned seem to have remained stationary at $15.50 to $16.00 at furnace and are therefore out of the race with southern iron. The inquiry for northern, southern and high silicon iron for a Detroit concern has been disposed of by a purchase of some resale southern iron and some northern through an agency not represented here. The high silicon iron is said to have been bought from Jackson county, but this could not be confirmed. The total tonnage was something over 1,000 tons. A sale of 600 tons of Bessemer iron was negotiated under special conditions that removed the transaction as a price making factor. The 5,000-ton inquiry that has been mentioned in the trade, from a Michigan concern, has been deferred for the present. A local consumer who has been feeling the market from time to time for 500 tons is still in the market. An inquiry from an eastern concern calling for 12,000 tons of No. 2, No. 3, and gray forge in equal quantities, deliveries commencing at once, is the only large inquiry reported. A cablegram received here on Monday stated that it was rumored abroad that 100,000 tons of southern iron has been sold to Genoa, Italy, but nothing could be learned here regarding such a transaction. Inquiries for moderate lots are under consideration with deliveries running into the second half of the year. A number of minor sales

have been made recently which have been transactions of special arrangement such as the helping out of the buyer on old high priced contracts and other features which were really matters of adjustment. The rank and file of melters are still buying very little iron and taking iron on old contracts sparingly. The market is regarded as easy, but not quotably lower. We quote for second quarter delivery delivered Cincinnati, based on rates of $3.25 from Birmingham and $1.20 per ton from Ironton, as follows:

	PER TON
Southern foundry No. 1	$15.75 to 16.25
Southern foundry No. 2	15.25 to 15.75
Southern foundry No. 3	14.75 to 15.25
Southern foundry No. 4	14.25 to 14.75
Southern No. 1 soft	15.75 to 16.25
Southern No. 2 soft	15.25 to 15.75
Southern gray forge	13.50 to 13.75
Northern No. 1 foundry	17.20 to 18.20
Northern No. 2 foundry	16.70 to 17.70
Northern No. 3 foundry	16.20 to 17.20
Northern 8 per cent silicon	20.20 to 21.20

Coke.—Spot coke is easy and irregular with prices being made according to individual opinion. Special lots are being picked up at bargain prices. Contract prices are about the same as last week, with but little being done. Contract prices in the leading coke producing districts are as follows:

Wise county furnace coke	$1.75 to 2.00
Wise county foundry coke	2.25 to 2.35
Pocahontas furnace coke, prompt shipment	1.65 to 1.90
Pocahontas foundry coke	2.00 to 2.25
Connellsville furnace coke, prompt shipment	1.70 to 1.90
Connellsville foundry coke	2.25 to 2.50

Finished Material.—The market continues quiet with mill order business light and store trade only fair. Bolts are weak. Retail dealers fill orders here at the following prices:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼ inch and heavier, 2c; 3/16 inch, 2.10c; No. 8, 2.15c; sheets (blue annealed) No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c; and No. 28, 2.85c to 2.95c; boiler tubes, 2¾ to 5 inches, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Old Material.—The market continues quiet and without material change. Dealers' prices here are about as follows:

Old No. 1 R. R. wrought, net tons	$11.00 to 12.00
Cast machine and fdy., net tons	12.00 to 12.50
Old iron rails, gross tons	16.50 to 17.50
Old steel rails (re-rolling) gross tons	12.50 to 13.50
Old short lengths, gross tons	12.50 to 13.50
Old iron axles, net tons	16.50 to 17.50
Heavy melting scrap, gross tons	11.50 to 12.50
Stove plate, net tons	9.50 to 10.50
Wrought turnings	5.50 to 6.50
Cast borings, net tons	4.50 to 5.50
Car wheels, gross tons	16.50 to 17.50

The Hamilton Iron & Steel Co. of Hamilton, O., will be blown in by or before July 1. The stack has a capacity of 250 tons per day. It will be run on foundry, Bessemer, malleable Bessemer and basic. The officers of the company are George L. Pearson, president; Edwin N. Ohl, vice president; R. E. Field, secretary and treasurer. Mr. Ohl, the vice president, is also president of the United Iron & Steel Co. of Pittsburg. Walter-Wallingford & Co., of Cincinnati and Pittsburg, have been appointed selling agents for the furnace.

PHILADELPHIA.

Conflicting Opinions of Furnace Men as to Pig Iron Prices.

Office of THE IRON TRADE REVIEW, 308 Central Trust Bldg., April 14.

Pig Iron.—In the absence of any sales of importance, interest in market conditions centers largely in the meeting of the Eastern Pig Iron Association, to be held in New York tomorrow. The question of prices will be taken up, and there promises to be a lively difference of opinion on this subject. Some producers, tired of seeing southern and independent furnaces carry off nearly all such little business as there is, are in favor of making a cut in prices, say of $1 a ton, in order to bring customers into the market. They point to the fact that there are from 80,000 to 100,000 tons of pig iron stacked up in this territory and that this must be disposed of before there can be any very radical improvement. This view will be vigorously combatted by other furnace men, who profess to be able to see that a turn in the tide is near and who will strongly urge that present prices be maintained. A majority vote will decide the question. Sales continue very light, and none of large size of Pennsylvania iron are reported. Virginia furnaces have booked some orders, none of them large, and the independents have also picked up a few. Most of the orders placed at the scheduled figures have ranged from 25 to 75 tons and reflect the dull times among the melters. It is a rather interesting bit of news that the western Pennsylvania furnace which demoralized local conditions a few weeks ago by its slashing cuts in prices has been blown out for lack of new business, and has a large accumulation of iron on hand. The Nittany furnace, near Bellefonte, has been put out of blast for the same reason. On the other hand, Joseph E. Thropp's Saxton furnace, in the Broad Top region, has been blown in after many weeks of idleness. It is not included in the agreement to maintain prices. Excluding sales of southern and independent iron, which run from 50 cents to $1 a ton under standard rates, prices remain unchanged, as follows.

No. 1X foundry	$18.75 to 19.25
No. 2X foundry	18.25 to 18.50
No. 2 plain	17.75 to 18.00
Standard gray forge	16.50 to 16.75
Basic	17.25 to 17.50
Low phosphorus	23.50 to 24.00

Finished Material.—There has been no essential change in the situation. Mills continue on about half capacity, and new business is moderate. A local firm of pipe founders is reported to have secured from Cuba a contract for 6,100 tons of pipe. In the absence of domestic business much attention is being given to the export trade, which is not governed by the understanding as to prices, and every effort is being made to stimulate South American and European demand. Prices show no change, as follows: Structural material, 1.85c to 2c, according to specification; plates, 1.85c to 1.90c; steel bars, 1.75c to 1.80c; refined iron bars, 1.65c.

Old Material.—There is very little doing, as the mills continue to refrain from any considerable purchases. The only comforting reflection is that much less scrap than usual is being produced, so that the accumulation is not so great as might be supposed. Prices show slight declines in yard scrap and No. 2 forge, as follows:

Old steel rails	$14.75 to 15.25
No. 1 steel scrap	12.75 to 13.25
Old steel axles	17.00 to 17.50
Old iron axles	19.50 to 20.00
Old iron rails	16.50 to 17.00
Old car wheels	15.00 to 15.50
Choice scrap R. R. No. 1 wrought	14.50 to 15.00
No. 1 yard scrap	12.50 to 13.00
Machinery scrap	14.50 to 15.00
Low Phosphorus scrap	17.50 to 18.00
Wrought iron pipe	11.50 to 12.00
No. 1 forge fire scrap	10.50 to 11.00
No. 2 forge fire scrap, ordinary	8.50 to 9.00
Wrought turnings	9.00 to 9.50
Axle turnings, heavy	10.50 to 11.00
Cast borings	7.50 to 8.00
Stove plates	11.00 to 11.50

BUFFALO.

Pig Iron Prices Continue to Sag, But Inquiry Increases.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, April 14.

Pig Iron.—The market is showing considerable fluctuation within rather narrow limits, with little change from week to week. Prices have continued to run off and we are quoting figures that are a reduction of 50 cents a ton from last week on all grades, excepting charcoal, which is quoted a dollar lower. There is a greater amount of inquiry in hand than for

some time past, but sales continue small. The furnaces of Corrigan, McKinney & Co. at Charlotte, N. Y., have been blown out. We quote as follows, f. o. b., Buffalo:

No. IX foundry	$16.80 to 17.30
No. 2X foundry	16.30 to 16.80
No. 2 plain	15.80 to 16.30
No. 3 foundry	15.30 to 15.80
Malleable Bessemer	16.50 to 17.00
Gray forge	15.00 to 15.50
Charcoal	21.00 to 21.50

Finished Materials.—Bids will be opened here next month for a new marine hospital, to cost about $80 000. The Buffalo General Electric Co. contemplates erecting a new office building for its own use. The plans and specifications have not yet been prepared. The plant of the Buffalo Boat Co. at Tonawanda, N. Y., has been closed.

ST. LOUIS.

Fair Amount of Business in Pig Iron for Immediate Use.

April 13.

Pig Iron.—While some sales in the St. Louis territory were made last week as low as $12, Birmingham basis, for No. 2, the greater portion of the business was placed at from $12.25 to $12.50, covering immediate delivery and shipment over the next six months. A fair volume of business was placed by foundrymen covering immediate needs, but there is not much tonnage booked for shipment in the future. Most of the melters are awaiting developments, which are liable to result in a buying movement at any time. The week beginning today brings out more inquiries than have been received during the past month. These cover deliveries as far ahead as the last quarter of 1908, as well as spot shipment. It remains to be seen whether orders will result. Our quotations, Birmingham basis, to which $3.75 freight is to be added, follow:

No. 1 southern	$12.50 to 13.00
No. 2 southern	12.00 to 12.50
No. 3 southern	11.50 to 12.00
No. 4 southern	11.00 to 11.50

Coke.—Absolutely no change has taken place in the coke market, prices remaining practically the same, and with very little buying for any delivery. Connellsville, best selected, 72-hour foundry coke is offered at from $2.15 to $2.75, ovens, for immediate and future deliveries, the lower price usually applying only on quick shipments. Connellsville 48-hour furnace coke is to be had at $1.60 to $2, ovens. West Virginia and Virginia, best selected 72-hour foundry coke, can be had at from $2.25 to $2.50, ovens, for deliveries up to Jan. 1. For same deliveries, 48-hour furnace coke can be bought for $1.75 to $2, ovens.

The freight on Connellsville, West Virginia and Virginia coke is $2.80 and $2.90 to East St. Louis, respectively, and $2.40 from Virginia when destined beyond St. Louis.

Finished Material.—There is nothing new in the building line. Work that was to have been begun at once on the new $1,000,000 Carnegie library, will be delayed for some time, it is reported this morning, because the plans, which are being made by Cass Gilbert, of New York City, are only half completed.

Old Material.—The market remains dull, with hope for something better upon which to base calculations. Our quotations follow:

Cast iron borings, free from foreign material, net ton	$ 5.00
Steel axle turnings, net ton	8.00
Steel railroad axles, net ton	14.00
Iron railroad axles, net ton	15.50
Miscellaneous steel scrap, gross ton	10.50
Cast iron borings (free) net ton	4.00
Old car wheels, gross ton	16.00
No. 1 railroad cast scrap, net ton	11.00
Heavy machinery cast, net ton	12.00
Stove plate and light cast, net ton	10.00
Sheet iron, net ton	4.00
No. 1 railroad wrought, net ton	12.00
Railroad malleable, net ton	11.50
Heavy melting steel, net ton	10.00

BIRMINGHAM, ALA.

Pig Iron Quiet and Improvement Not Expected Soon.

April 13.

The Alabama pig iron market is rather quiet. The quotations are far from being as strong as they might be and there are no indications that the improvement is going to be of a decided nature until the political situation clears up considerably. The production in this state has not been changed any in the past week, though a report has been given out that one or two furnaces would be blown out shortly if the demand did not pick up some.

The home consumption of pig iron in this district has again taken a backward step. One of the larger consumers has curtailed production once more. The two cast iron pipe plants at North Birmingham are doing fairly well.

Foundries and machine shops do not report any improvement in conditions.

The work on the improvements and development at the big furnace and steel plants of the Tennessee Coal, Iron & Railroad Co. at Ensley is being pushed with considerable success. It is believed that there will be some time made and that a resumption of operations will take place two weeks if not more earlier than was at first anticipated. The statement was made at first that about six weeks' time would be taken in making the improvements. Already the stoves in the blast iron furnace plant have been connected up and other work is being rushed.

Pig iron quotations still range between $12 and $13 per ton, No. 2 foundry.

BRITISH IRON MARKET.

Recent Advance in Pig Iron Not Maintained.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., April 4.

The pig iron market has not maintained its recent advance, prices having fallen back this week about 1 shilling. There has been a slight recovery during the last day or two, today's quotation for Cleveland, being 51s 3d ($12.54) with 49s 3d ($12.06) for three months. The recession has encouraged some people to conclude that the recent improvement was artificial, and the effect has undoubtedly been to check the advance which had commenced in the Midland district, but already there are signs of recovery, the market yesterday rising about 4d. Essentially, the conditions are unchanged, and there seems some reason for accepting the explanation that somewhat depressing reports from the continent and America alarmed the holders of stocks. Shipments are maintained, and stocks continue to decrease, the present holding at Middlesbrough being 72,652 tons. There are no stocks anywhere in this country beyond these, the output of all the furnaces in Staffordshire, Northampton, and Derbyshire, as well as in Middlesbrough going into consumption. The March shipments are only slightly below those of February. For the moment pig iron sold on the Birmingham market has given way a little, and buying is suspended, but any material fall would seem to be impossible. The hematite market keeps fairly strong, sellers securing 59s ($14.44) for east coast mixed numbers. The blast furnaces in South Wales are busy, and are getting rid of their output.

GERMAN MARKET.

Production Greatly Reduced and Prospects Gloomy.

Dusseldorf, April 3.—The annual reports of our great banks and industrial companies, which closed their year's account on Jan. 1, nearly all express the opinion, that the industrial situation has now touched the bottom and that it is now likely to improve. Nobody, however, states any facts showing the improvement, and indeed there are not yet any favorable signs of the future. The whole horizon remains dark. The production of coal, coke, pig iron, etc., continues to be strong-

ly decreased, but nevertheless stocks are growing further. The big syndicates refuse any reduction in prices for the raw materials, whilst on the other hand half-finished material is thrown upon the world's market at any price. German wire billets and sheet billets are being offered in England at 82 marks, f. o. b. Liverpool ($19.15), whilst the inland buyer has to pay for the same material 102.50 marks ($24.40). Bar iron is offered for export at 94 marks, f. o. b. Rotterdam ($22.40), whilst the inland price is now down to 105 marks ($25). Orders for pig iron become more scarce from day to day for the inland product, but great quantities of English pig iron are imported, although the English iron has to pay an import duty of 10 marks ($2.40) per ton. All industries are urging the coal syndicate to reduce its prices in conformity with the general depression, but the coal miners not only refuse every reduction, but even insist on increased prices for any kind of fuel from April 1. In consequence of this, even the state authorities have been asked in the reichstag to control the price policy of the coal syndicate, but the state authorities refuse to interfere. The Hamburg-American line is buying nearly its whole requirement of fuel in England. It cannot be doubted, that we are going to have a crisis in our industry, if the present policy of our syndicates is continued. The great mixed works having their own mines of coal and ore, own blast furnaces, rolling mills, foundries, etc., will, of course, be able to stand the consequences, being more or less independent of the syndicates for their raw material, but the ready material industry is bound to suffer heavily and to lose its ability to compete in the world's market.

METAL MARKET

NEW YORK.

April 14.

Copper.—The market throughout the week has been weak and inactive, with the price level tending steadily downward. Little interest is being manifested by consumers either in this country or abroad. We quote as follows: Lake, 12¾c to 12⅞c; electrolytic, 12⅝c to 12¾c; casting, 12⅜c to 12½c.

Pig Tin.—The situation at present is about the same as a week ago. Following a brisk buying movement, there has been a slight reaction and the current level is 31¼c to 31⅝c.

Pig Lead.—The feeling is somewhat stronger, but the price level remains the same as a week ago, 3.90c to 4c, New York, on a steady market.

Spelter.—The market level is lower, due to the pressure for sale of metal which had been held for some time. We quote, 4.60c to 4.65c.

Antimony.—Hand to mouth buying is all that is being done and the market is lifeless with prices nominally as follows: Cookson's 8¾c to 9c; Hallett's, 8½c to 8¾c; ordinary brands, 7¾c to 8c.

CHICAGO.

April 14.

The price of retail copper has been less firmly held in the past week, but other metals have maintained the position of a week ago practically without change. We have changed our prices and quote as follows:

Lake copper, 13¾c to 14c; casting, 13¼c to 13½c; pig tin, 33½c to 34c; spelter, 5c to 5.10c; pig lead, desilverized, 4.10c to 4.25c in 50-ton lots; corroding, 4.60c to 4.75c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound flasks; Cookson's antimony, 12½c to 13c; other grades, 12c to 12½c.

With the exception of copper, the old metals have been in sufficient demand to establish somewhat better prices and we quote to dealers as follows:

Copper wire, 10¾c; heavy copper, 10¾c; light copper, 10¼c; heavy red brass, 10¼c; heavy yellow brass, 8¼c; light brass, 6c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7c; brass clippings, 8c; tea lead, 3c; lead scrap, 3¼c; zinc, 3⅛c; tin pipe, 26c; tin foil, 22c; pewter, 17c; electrotype plates, free from wood, 3¾c; electrotype dross, 2½c; stereotype plates, 4¼c; stereotype dross, 2⅞c; prime slab zinc dross, $62 per ton.

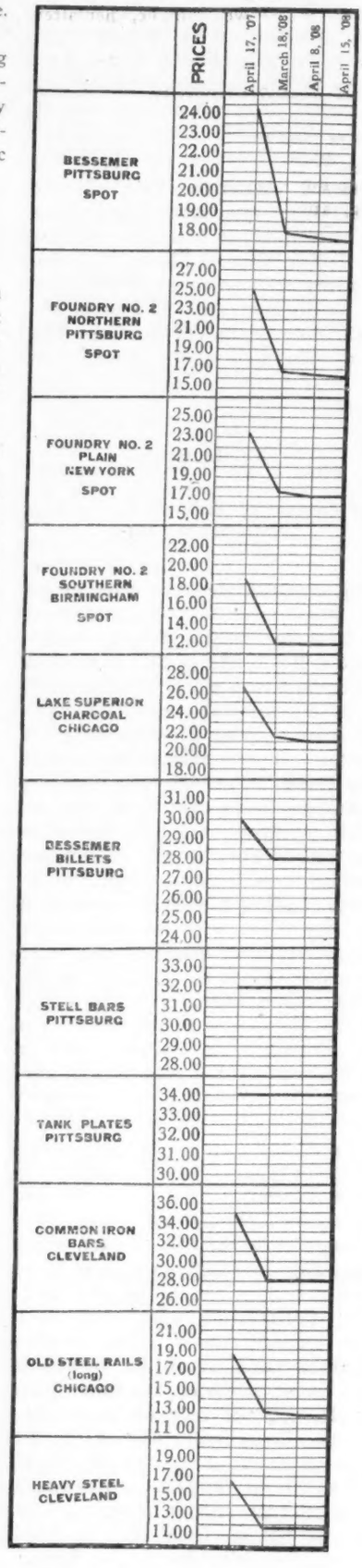
ST. LOUIS.

April 13.

There was a good demand for zinc and lead ore in the Joplin district last week, prices being forced upward by a new buyer in the field, zinc to $36 a ton on a basis of 60 per cent zinc, giving a high market price of $39.50. The range downward in basis price was $34.

Quite a good deal of lead was sold at $54 a ton, and a reliable but unconfirmed report was out that $55 was paid for a choice lot. Rains delayed operations and decreased the output, and the reserve stock was small when the week closed. Small shipments are looked for this week.

PRICE CHART.



PERSONALS.

The permanent address of Prof. Henry M. Howe will be, hereafter, McLean Road, Bedford Station, N. Y.

H. B. McMaster has resigned as secretary of the General Fire Proofing Co., Youngstown, O. His resignation is effective May 1.

W. P. Snyder, president of the Shenango Furnace Co., has returned to Pittsburg, after having spent the winter at Palm Beach, Fla.

Alexis W. Thompson, former president of the Republic Iron & Steel Co. has been chosen president of the Inland Steel Co. to fill the place made vacant by the resignation of Charles Hart.

Charles M. Schwab, Charles Whetmore and Allen A. Ryan, out-going directors, were re-elected at the recent annual meeting of the Bethlehem Steel Corporation.

J. A. Vennables, secretary and treasurer of the New York Car Wheel Co., Buffalo, N. Y., has been made manager, vice P. H. Griffin, resigned. Mr. Vennables will continue also as secretary and treasurer.

Thomas F. Shannon has resigned as first vice president of the Maryland Rail Co., Baltimore, Md., and John E. Edwards has been elected to fill the vacancy. Mr. Shannon will move to Columbus, O., where he will act as agent of the Maryland Rail Co.

William R. Hubbard, assistant superintendent of the Buffalo & Susquehanna Iron Co., has resigned to become superintendent of the Federal Iron Co., Chicago. J. J. Bowen will go to Chicago as Mr. Hubbard's assistant.

W. J. Culletin, superintendent of the H. C. Frick Coke Co. in the Broad Ford valley plants, has been appointed superintendent of the new Phillips plant of the company which is now under construction and partially completed.

J. M. Jamison, president of the Jamison Coal & Coke Co., was nominated for the Pennsylvania state senate from Westmoreland county, at the Republican primaries recently held. Mr. Jamison had no opposition for the nomination.

E. E. Keller, for over 20 years connected with the Westinghouse interests and for 14 years vice president of the Westinghouse Machine Co., having completed his duties as receiver and general manager, severed his connection with the management of that company on the first of the month. Mr. Keller will take a much needed rest and will then devote most of his time to several personal interests.

OBITUARY.

Frank H. Chamberlin, president and general manager of the J. D. Smith Foundry Supply Co., Cleveland, died April 10 from meningitis, after three weeks' illness. Mr. Chamberlin was born in Cleveland, July 29, 1870, and graduated from Case School of Applied Science in 1892. His first business connection was with the Variety Iron Works, of which the Cleveland Facing Mill was then a part. After two years, Mr. Chamberlin became proprietor of the Cleveland Facing Mill, which, six years later, was consolidated with the

FRANK H. CHAMBERLIN.

J. D. Smith Foundry Supply Co., of Cincinnati, whose plant had been destroyed by fire. The new company expanded rapidly and added an engineering department. Large additions were made to the plant during the past two years. Mr. Chamberlin was a member of the chamber of commerce, builders' exchange, University Club and the Phi Kappa Psi fraternity. He leaves a widow and two sons.

Oscar Brons, president of the Hammond, Ind., boiler works, died April 9, aged 68 years. He came to Chicago from Sweden when 18 years old, and for a time worked as a journeyman boilermaker.

Byron J. Carter, vice president and general superintendent of the Motor Car Co., and one of the best known automobile men of Detroit, died April 6, aged 45 years. He was a native of Jackson, Mich., and in 1894 became interested in gas engines, and, unaided, built a steam car in which the engine was incorporated. Later, he turned his attention exclusively to gasoline engines, and in 1905 he organized the Motor Car Co.

Nathaniel Bouton, a pioneer manufacturer of Chicago, died April 3 at Dunedin, Fla., aged 80 years. He was born in Concord, N. H., and came to Chicago in 1852 as representative of the Fairbanks Scale Co. In 1857 he purchased the Union Car Works and operated the plant until 1863. He served during the war in the Union army, and at the close of the war he conducted the Union Foundry Works until its consolidation with the Pullman Car Co. in 1886. He then organized the Bouton Foundry Co., and was a director in the Renwood Bridge Co. He had also established foundries in Naperville, Ill., and Birmingham and Decatur, Ala. At the time of his death he was president of the Maryland Car Wheel Co. He was the oldest car wheel manufacturer in the United States, and one of the pioneers in the manufacture of structural steel.

Hall W. Watts, president of the Railway Club of Pittsburg and master car builder of the Monongahela Connecting railroad, died at the Allegheny General hospital, Pittsburg, April 12, following an extended illness which was believed by his physicians to have been due to a fall suffered last summer. Mr. Watts was born in Allegheny, Pa., 58 years ago and after being educated in the public schools, gave his attention to the contracting business. Later he entered the employ of the Jones & Laughlin Steel Co. and was in charge of the shipment of ore for several years. When the Monongahela Connecting railroad was built by Jones & Laughlin, Mr. Watts for a time was superintendent and he had ever since been with that subsidiary company, more recently being in charge of the mechanical department. Mr. Watts was prominent in the Master Car Builders' Association and other mechanical engineers' organizations and last fall was chosen president of the Railway Club of Pittsburg.

A Social Session.—The monthly meeting and dinner, at the Exchange Club, Boston, of the New England Foundrymen's Association on Wednesday, April 8, was a purely social affair, and there were no addresses or discussions of trade topics. President H. F. Arnold presided and about 60 were present. The only speaker was Vice President Byrnes, of the New York, New Haven & Hartford railroad, the special guest of the occasion.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BOSTON.....1053 Exchange Bldg.
BUFFALO.....932 Ellicott Sq.
CHICAGO.....1352 Monadnock Blk.
CINCINNATI.....First National Bank Bldg
NEW YORK.....1005 West Street Bldg.
PHILADELPHIA.....308 Central Trust Bldg.
PITTSBURG.....510 Park Bldg.

Subscription, United States and Mexico, $3.00 per annum. To Canada and Foreign Countries, $4.50. Advertising Rates Furnished on Application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co. will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP.

COPYRIGHT 1908 BY PENTON PUBLISHING CO.

April 16, 1908.

OUR FOREIGN RAIL TRADE.

It is well known that the export trade has been bringing better prices in recent years than formerly. Contemporaneously with this change there have been changes in the alignment. The European and African rail demand has lately gone entirely to British and Continental rail mills. A few rails are still exported to these continents, but they comprise light rails only. In the following table rail exports in 1900 and 1907 are compared. The rails exported to Hawaii in 1900 are omitted, for comparative purposes, as Hawaiian exports are not now regarded as foreign commerce.

	Rail Exports, Gross tons.	
	1900.	1907.
Europe	31,530	496
British North America	125,931	37,216
Central American states and British Honduras	1,667	28,715
Mexico	34,993	32,930
West Indies and Bermuda	9,972	28,165
South America	20,462	85,919
Japan	44,654	34,922
Other Asia and Oceania	63,408	89,470
Africa	17,657	1,073
Total	350,274	338,906

The year 1900 was selected for comparison with 1907 partly because the total tonnage is substantially the same. There have been some years with larger exports, and years with much smaller exports.

The changes in the alignment are quite clear. Through a better understanding with foreign rail producers, Europe and Africa have been given over to their natural source of supply, thus resigning about 50,000 tons. Through the establishment of rail making in Canada, exports to that country have decreased about 90,000 tons. There was a net decrease in the total of about 10,000 tons, while there was an increase in exports to points outside of British North America, Europe and Africa of almost exactly 125,000 tons.

So much has been heard lately about developments in Mexico and in Japan that one would expect to find that rail exports to these countries had increased, but such is not the case. Exports to these countries have decreased. In endeavoring to ascertain whether British exports to these countries had changed, we discover that in 1900 the British statistics separately mentioned them, while in 1907 the names have been dropped from the list. It cannot be observed whether this was because the exports have become inconsequential, or because British manufacturers moved the Board of Trade to change the classification. It is interesting to note that while in 1900 Great Britain exported some 10,000 tons of rails to Canada, in 1907 the exports were only 4,000 tons, so that our loss in rail trade with Canada is not due to the preferential tariff with the mother country.

Our total rail exports have been as follows to all countries, the Hawiian exports of some 9,000 tons in 1899 and 6,000 tons in 1900 being deducted as they were not returned in subsequent years:

1899	262,161
1900	350,274
1901	318,055
1902	67,455
1903	30,656
1904	414,845
1905	295,023
1906	328,036
1907	338,906

Gross earnings of 37 railroads for the third week in March show a decrease of $1,065,420 or 11 per cent.

SOUTHERN IRON ORE RESERVES.

The estimate of 340,000,000 tons of workable red ore in the Birmingham district, just made by E. F. Burchard of the United States Geological Survey, illustrates the uncertainty attending estimates of iron ore reserves. It was only a few months ago that E. C. Eckel, also of the Geological Survey, estimated the amount of red ore in the state of Alabama above the 1,000 foot level at 1,000,000,000 tons. The difference is largely in the definition of what may be considered a workable ore, as about 90 per cent of the red ores of the state lie in the Birmingham district. The present estimate of 340,000,000 tons refers to ore workable under present conditions, and is the first really definite estimate which has been made. The report of Prof. Tornebohm a couple of years ago to the Swedish government, attempting to include all the known iron ore reserves of the world, did not include the red ores of Alabama at all, and set down the brown ores at the modest estimate of 100,000,000 tons.

Mr. Eckel's estimate of 1,000,000,000 tons for the red ores of Alabama was accompanied by an estimate of the brown ores of the state at 75,000,000 tons, and estimates of these ores for other southern states bringing the totals to 1,850,000,000 tons of red and 725,000,000 tons of brown ore, a total of over 2,500,000,000 tons, above the 1,000 foot level, with the prospect that taking ore below that level, and fuller exploitation, perhaps four times that amount might be found.

One lesson is clearly taught by all these investigations and estimates, and that is that it is quite fanciful to discuss total tonnages of iron ore reserves with exact reference to present mining and manufacturing conditions and present rates of consumption. The economic value of all these ores is relative to conditions, and conditions are certain to change; indeed they are changing even now. The value of ores being mined in different districts is relative to the cost of smelting and carrying the resultant product to the

point where the demand exists. Gradually the iron content of Lake Superior ores as shipped season by season has been going down, but that has not reduced their consumption, as the rapidly increasing shipments over the past few years well show. The cost of producing a ton of pig iron from them has increased, but the increase has passed almost unnoticed through being covered up by current market fluctuations. In the long run, ores in excess of all the estimates that have been made will probably find their way into steel, at an increasing cost in effort expended, if not in actual dollars and cents, but the change will be so gradual that it will not be noticeable except through long range comparisons. Thus the conservative estimate of Mr. Burchard, of 340,000,000 tons of red ore in Alabama, workable under present conditions, represents according to his idea from 75 to 100 years' supply at the present rate of consumption. With its flexibility and constant introduction of economies and improvements, the iron trade does not need to be able to look nearly so far ahead as this; it can find ways and means long ahead of any possible exhaustion, and iron is intrinsically too valuable for its consumption to be arrested by any such relatively minor advance in the cost of production as may be necessitated.

The estimate of 340,000,000 tons of workable red ore in the Birmingham district is made in an advance report of Mr. Burchard's investigations. The full report will be published in the latter half of this year. The district covered is 26 miles of the Birmingham valley, along Red Mountain from Morrow Gap, about 10 miles northeast of Birmingham, to Spark's Gap, about 16 miles southwest of Birmingham. The 26 miles of the seam are subdivided into eight portions, showing outcrops ranging from 4.54 feet to 8.32 feet, and the workable distances from outcrop are taken at from 2,720 to 9,500 feet, to points where the thickness of the seam will have diminished to from 3 to 5 feet. This district is Division A in Mr. Burchard's nomenclature, there being six other divisions of the Birmingham valley, reserved for later treatment. Division A is regarded as by far the most important, in point of tonnage and workability, but one of the factors in determining workability is the distance from the blast furnaces, and another is the accessibility. These two factors are transient, and changes can readily occur through the progress of the industry by which the Birmingham district may be found to have much more than 340,000,000 tons of workable red ore.

ANNUAL REPORT OF THE BETHLEHEM STEEL CORPORATION.

The Bethlehem Steel Corporation made a much better showing than expected for the year ending Dec. 31, 1907, as exhibited in its third annual report just issued, revealing a net income available for dividends on preferred stock of approximately 11 per cent. It is only fair to point out that last year interest was paid on practically the entire new bond issue of $12,000,000, the proceeds of which have been used in new construction now in operation, but which produced practically no revenue for the corporation in 1907. The profit and loss account, including subsidiary companies is as follows:

	1907.	1906.
Net manufacturing profit.	$2,569,252	$1,859,353
Less share ext. losses....	.....	647,193
Net profit	2,569,252	1,212,160
Other income	69,705	152,015
Total net income.....	2,638,957	1,364,175
Int. on notes and adv...	112,330	44,122
Balance	2,526,627	1,320,053
Bond interest, etc.....	907,838	557,303
Balance	1,618,789	762,749
Depreciation	.....	.....
Net income for year..	1,618,789	762,749
Previous surplus	593,421	1,843,619
Total surplus	2,212,210	2,606,368
Extraordinary losses	.....	1,118,467
Net surplus	2,212,210	1,487,901
Preferred dividends	111,810	894,480
Profit and loss surplus	2,100,400	593,421

The net income for the year, $1,618,789, is equal to 7 per cent on the $14,908,000 preferred stock, and an additional 3.87 per cent earned on the $14,862,000 common stock outstanding. The directors stopped the payment of preferred stock dividends on April 16, 1907, and none has been paid since. The preferred stock paid 7 per cent until November, 1906, when the dividend was cut to a 3 per cent basis.

The total estimated value of orders booked by the corporation during the year aggregated $15,615,018, with an estimated value of unfilled orders on hand Dec. 31, of $8,425,736. The number of employes of the corporation on Dec. 31, 1907, was 9,783, as compared with 13,425, on Dec. 31, 1906; 13,354, on Dec. 31, 1905, and 9,461 on Dec. 31, 1904.

During the year, two of the new mills referred to in previous reports were completed, together with the open-hearth furnaces and the boiler, pumping and electrical plants, railroads, etc., necessary for their operation. The first rail was rolled on the new rail mill Sept. 3, 1907, and to Dec. 31, 1907, there had been produced on this mill 33,754 tons of open-hearth steel rails. The first beam was rolled on the special structural mill Jan. 9, 1908, and this mill is now operating successfully. These mills began operations with an unusual absence of the difficulties customarily encountered on starting up a new plant, and their performance has been highly satisfactory. The 28-inch standard structural mill is now being completed, and is expected to be ready to begin rolling about July 1 next. The improvements on the old plant contemplated at the time of the first extension mortgage bond issue are also practically completed.

While the effect of the recent financial depression has been felt considerably in the past few months, and is reflected in the diminished orders booked for miscellaneous work, the directors believe that the increased earning power of the new mills will, in a large measure, offset the natural decrease in the earnings from the old plant.

The mines of the Juragua Iron Co., a subsidiary company to the Bethlehem Steel Co., have been in continuous operation during the year, producing 181,063 tons of Bessemer ore, all of which has been shipped to the Bethlehem Steel Co. Development work, which has been carried on for some time, shows constantly increasing tonnages of ore proved up, and the mines are now shipping about 30,000 tons of ore per month, which will be gradually increased with the installation of new equipment, and the opening of further ore bodies.

The statement of the American Car & Foundry Co. for the quarter ending Jan. 31 shows net earnings of $1,772,201, a decrease of $535,081 compared with the corresponding quarter of 1907, or a reduction of 23 per cent. There was paid in dividends out of the earnings for the quarter, $825,000. The total surplus, as of Jan. 31 last, was $24,218,452, an increase of $6,236,039.

SEVERE TESTS.

(Continued from page 697.)

shows pipe, the top rail from each ingot shall be rejected. If this test piece does not break, and when tested to destruction does not show pipe, the rails of the heat will be accepted as either No. 1 or No. 2 classification, accordingly as the deflection is less or more, respectively, than the prescribed limit.

The chemical composition for both Bessemer and open-hearth rails varies somewhat from the specifications of the manufacturers and the several technical bodies that have prepared specifications in the past. The lowest carbon limit for Bessemer rails prescribed by the Pennsylvania system is 0.45 per cent, as compared with 0.35 per cent prescribed by the manufacturers and 0.50 per cent prescribed by the American Society of Civil Engineers. The upper limit of the latter is 0.65 per cent, as compared with 0.55 per cent prescribed by the Pennsylvania system. While the desired composition of the manganese of the Pennsylvania specifications is 1 per cent, the steel manufacturers provide a range of 0.70 to 1.14 per cent and the civil engineers 0.75 to 1.05. The lower and upper limits of the Pennsylvania specifications are 0.80 and 1.20 per cent, respectively. While the upper limit of silicon is 0.20 per cent in the Pennsylvania specifications, the desired composition is 0.12 per cent. The specifications of the civil engineers and the steel rail manufacturers provide for a silicon content of not over 0.20 per cent. No phosphorus is permitted in the desired composition of the Pennsylvania specifications, although the upper limit is 0.10 per cent. The chief difference in the chemical composition of the open-hearth rails is in the manganese, which can have a range of 0.75 per cent to 1.05 per cent, according to the specifications of the civil engineers. The Pennsylvania preferred analysis does not provide for even a trace of manganese, although the upper limit is 0.80 per cent. The upper limit of phosphorus is 0.03 per cent, as compared with 0.05 per cent provided by the civil engineers. There is also a slight difference in the shrinkage allowance, which has been reduced in the Pennsylvania specifications. The shrinkage allowance at the hot saws for a rail 33 feet in length is 6 7/16 inches in the civil engineers' specifications, whereas the Pennsylvania system permits only 6¼ inches. Furthermore, the camber indicated by a middle ordinate in a rail 33 feet long has been decreased from 5 inches to 4 inches by the Pennsylvania system.

The Company's Statement.

The Pennsylvania Railroad Co. has issued the following statement:

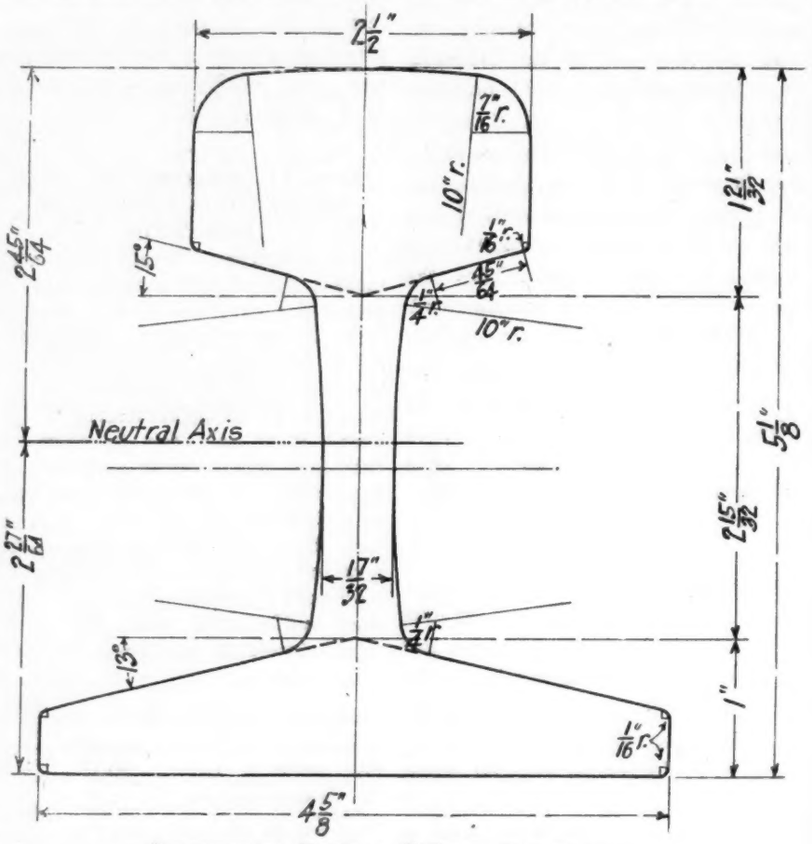
In view of the increasing severity of road service and the recognized necessity for developing an improved steel rail, the Pennsylvania railroad has been for some months conducting an exhaustive examination of the entire art and practice of rail manufacture. The inquiry has been of an exceptionally thorough character, and, though important results have been attained, the work of investigation will be continued.

General conditions have made it desirable to develop, if possible, a rail which should reduce the expense of maintenance and provide increased resistance against the growing requirements of road service. An incidental purpose of the plan was to secure uniformity in the rail practice of the lines east and west of Pittsburg. The series of experiments undertaken—though probably unprecedented in their completeness and in the importance of the scientific data which they are supplying—represented merely a continuance of the Pennsylvania's policy to conduct tests and inquire at all times as to the possibility of improving its present practice in any direction of activity.

To conduct this inquiry, a large special committee—composed not only of officers of the railroad, but of two of the important steel manufacturers—was appointed by the Pennsylvania system in June, 1907. The membership of that committee was as follows:

Theo. N. Ely, chief of motive power, lines east and west, chairman.
A. C. Shand, chief engineer, lines east.
L. R. Zollinger, engineer maintenance of way, lines east.
A. W. Gibbs, general superintendent motive power, lines east.
C. B. Dudley, chemist, lines east.
T. H. Johnson, consulting engineer, lines west.
Robt. Trimble, chief engineer maintenance of way, lines west.
W. C. Cushing, chief engineer maintenance of way, lines west.
J. C. Bland, engineer of bridges, lines west.
D. F. Crawford, general superintendent motive power, lines west.

The investigations and discussions of this committee have now resulted in the development of rail sections and specifications which are believed to be a distinct



PENNSYLVANIA RAILROAD, 85-POUND RAIL SECTIONS.

Area of Head	3.57	sq. in.	42.2	per cent	Section Modulus	Head	10.77
" " Web	1.51	" "	17.8	" "	" "	Base	12.02
" " Base	3.39	" "	40.0	" "	Ratio Periphery Head to Area	Head	1.73
Total	8.47	" "	100.0	per cent	" " Web " "	Web	3.81
Moment of Inertia	29.1				" " Base " "	Base	2.69
					" Total Periphery to Total Area		2.48

improvement upon those hitherto in use on the Pennsylvania system. To make a practical test of the work of the committee, the company placed, in December, 1907, an experimental order for 10,000 tons of rails—a part of the 1907 allotment—to be rolled in accordance with the new sections and specifications. The experience with these orders has resulted in some slight changes in the specifications, but no change has been made in the sections as originally adopted. The Pennsylvania system has adopted as a standard for its 1908 orders the new sections and the specifications as revised Feb. 4, 1908. These specifications and sections are now made public, and are as follows:

PENNSYLVANIA RAILROAD SYSTEM.

Specifications for Steel Rails.

Chemical Composition

1. The steel of which the rails are rolled shall conform to the following limits in chemical composition:

Bessemer steel rails:

	Lower Limit, Per Cent.	Desired Composition, Per Cent.	Upper Limit, Per Cent.
Carbon	0.45	0.50	0.55
Manganese...	0.80	1.00	1.20
Silicon	0.05	0.12	0.20
Phosphorus		....	0.10

Open-hearth steel rails:

	Lower Limit, Per Cent.	Desired Composition, Per Cent.	Upper Limit, Per Cent.
Carbon	0.70	0.75	0.80
Silicon	0.05	0.12	0.20
Manganese...	....	....	0.80
Phosphorus		....	0.03

Process of Manufacture

2. Ingots shall be kept in a vertical position until ready to be rolled, or until the metal in the interior has had time to solidify.

3. No "bled" ingots shall be used.

("Bled ingot"—One from the center of which the liquid steel has been permitted to escape.)

4. There shall be sheared from the end of the bloom formed from the top of the ingot sufficient discard to insure sound rails.

(All metal from the top of the ingot, whether cut from bloom or rail, is the top discard.)

5. In reheating, care shall be taken to avoid burning the steel, and under no circumstances shall a "cinder heat" be used.

("Cinder heat"—One in which the scale on the sides of the ingot becomes fluid.)

6. The number of passes and speed of train shall be so regulated that on leaving the rolls at the final pass the temperature of the rail will not exceed that which requires a shrinkage allowance at the hot saws, for a rail 33 feet in length of 6¼ inches for 85-pound section, and 6½ inches for 100-pound section. These allowances to be decreased at the rate of 0.01-inch for each second of time elapsed between the rail leaving the finishing rolls and being sawed. The bars shall not be held for the purpose of reducing their temperature, nor shall any artificial means of cooling them be used between the leading and finishing passes, nor after they leave the finishing pass.

Mechanical Requirements

7. The name of the maker, the weight and type of the rail, and the month and year of manufacture shall be rolled in raised letters and figures on the side of the web, and the number of the heat shall be plainly stamped on each rail where it will not subsequently be covered by the splice bars. A letter shall be stamped on the web to indicate the portion of the ingot from which the rail was rolled.

8. The section of rail shall conform as accurately as possible to the templet furnished by the railroad company. A variation in height of 1/64 inch less or 1/32 inch greater than the specified height, and 1/16 inch in width of flange, will be permitted; but no variations shall be allowed in the dimensions affecting the fit of the splice bars.

9. The weight of the rails specified in the order shall be maintained as nearly as possible, after complying with the preceding paragraph. A variation of ½ of 1 per cent from the calculated weight of section, as applied to an entire order, will be allowed.

10. The standard length of rails, at a temperature of 60 degrees Fahr., shall be 33 feet. Ten per cent of the entire order will be accepted in shorter lengths, varying as follows: 30 feet, 27½ feet, and 25 feet; and all No. 1 rails less than 33 feet long shall be painted green on ends. A variation of ¼ inch in length from that specified will be allowed.

11. The rails must be free from injurious mechanical defects and flaws; shall be sawed square at the ends, a variation of not more than 1/32 inch being allowed; and burrs shall be carefully removed.

12. The rails shall be smooth on the heads, straight in line and surface, and without any twists, waves, or kinks; particular attention being given to having the ends without kinks or drop.

The hot straightening shall be carefully done, so that gagging under the cold presses will be reduced to a minimum. Any rail coming to the straightening presses showing any sharp kinks or greater camber than that indicated by a middle ordinate of 4 inches in 33 feet will be at once marked as a No. 2 rail, and only accepted as such. The distance between the supports of rails in the straightening presses shall not be less than 42 inches.

13. Circular holes for splice bars shall be drilled to conform accurately in every respect to the drawing and dimensions furnished by the railroad company, and must be free from burrs.

Tests and Inspection

14. One drop test shall be made on a piece of rail not less than 4 feet and not more than 6 feet long, selected by the inspector from each heat of steel, from any position in the ingot.

The test piece shall be placed head upwards on solid supports, 5 inches radius, 3 feet between centers, and both 85-pound and 100-pound sections shall be subjected to an impact test from a weight of 2,000 pounds, falling 15 feet.

The deflection for No. 1 classification rails must not exceed that indicated by a middle ordinate of 2 inches in 3 feet for 100-pound section, and 2¼ inches for 85-pound section.

Test pieces shall be tested to destruction.

The temperature of the test pieces shall be between 60 and 120 degrees Fahr.

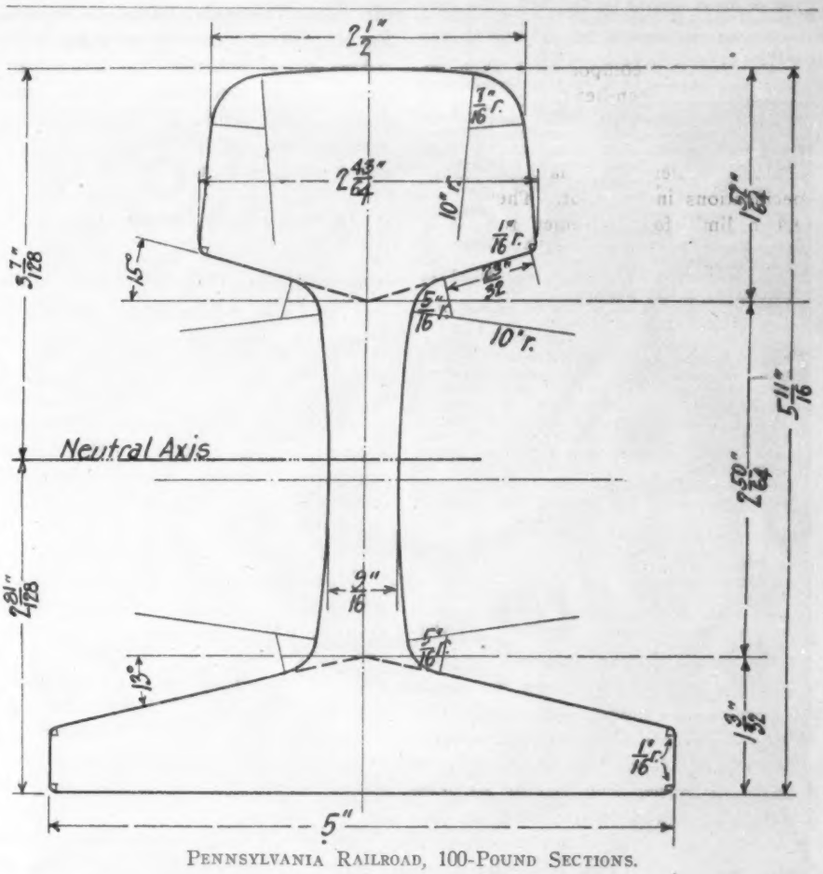
(*a*) If a test piece breaks without showing physical defect, all rails made from that heat shall be rejected absolutely.

(*b*) If, however, the test piece broken under test "*a*" shows physical defect, the top rail from each ingot of that heat shall be rejected; and

(*c*) A second test shall then be made of a test piece selected by the inspector. If this second test piece breaks, the remainder of the rails of the heat shall also be rejected. If this second piece does not break, the remainder of the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection is less or more, respectively, than the prescribed limit.

(*d*) If the test piece, test "*a*," does not break, but when tested to destruction shows pipe, the top rail from each ingot shall be rejected. The remainder of the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection is less or more, respectively, than the prescribed limit.

(*e*) If the test piece, test "*a*," does not break, and when tested to destruction does



PENNSYLVANIA RAILROAD, 100-POUND SECTIONS.

Area of Head....	4.09 sq. in.	41.0	per cent
" " Web.....	1.85 " "	18.6	" "
" " Base.....	4.03 " "	40.4	" "
Total	9.97 " "	100.0	per cent
Moment of Inertia.....		41.9	

Section Modulus	Head	13.71
" "	Base	15.91
Ratio Periphery Head to Area....	Head	1.59
" " Web " "	Web	3.58
" " Base " "	Base	2.43
" Total Periphery to Total Area		2.30

not show pipe, the rails of the heat will be accepted as either No. 1 or No. 2 classification, according as the deflection under test "a" is less or more, respectively than the prescribed limit.

NOTE—The drop test and the deflection requirements may be modified if considered advisable by the railroad company.

15. The drop-testing machine shall have a tup of 2,000 pounds weight, the striking face of which shall have a radius of not more than 5 inches. The anvil block of the drop testing machine shall weigh at least 20,000 pounds, and the supports shall be part of, or firmly secured to, the anvil. The foundations for the anvil block shall be such as will meet the approval of the railroad company.

16. No rails shall be accepted which contain any physical defects that impair their strength.

17. Rails improperly drilled or straightened, or from which the burrs have not been properly removed, shall be rejected, but may be accepted after being properly finished.

18. No. 2 rails to the extent of 5 per cent of the whole order will be received. All rails accepted as No. 2 rails must have the ends painted white, and must be kept separate from No. 1 rails, and be shipped in separate cars.

19. Rails will be accepted and billed according to actual weights.

20. All rails must be loaded in the presence of the inspector.

21. The makers shall furnish the inspectors with the carbon determination of each heat, and, also, two complete analyses which shall represent the average steel of each day's work, before the rails are shipped. These analyses will be checked from time to time by the railroad company's chemist, and, on request of the inspector, the makers shall furnish a portion of the test ingot for check analyses.

22. Inspectors representing the railroad company shall have free entry to the works of the makers at all times when the contract is being filled, and shall have reasonable facilities afforded them by the makers to satisfy them that the finished material is furnished in accordance with these specifications. All tests and inspection shall be made at the place of manufacture, prior to shipment.

New System Devised.

To still further strengthen the future practice of the company and to insure that whatever changes are made shall be based upon accurate data, a revised and uniform system of blanks and reports of wide scope has been devised whereby a full history of all rails purchased by the company shall be fully recorded. One series of blanks will cover information obtained at the mill during the process of manufacture. A second series will relate to rail statistics to be prepared by division officers, including a complete record of rail failures in main track. A third series will provide for statistical compilations of rail failures. A final series is to provide reports of actual measurements of rail sections laid in the track at stated periods, in order to determine the relative wear of rails of different composition and manufacture. These reports, together with the very careful inquiries and observations of the standing committees appointed to keep continually in thorough touch with the art of rail making, are expected to supply the company with data that will enable it to secure the best rails which, at the time of any order, it is possible to manufacture.

The Pennsylvania committee considered very carefully the advisability of changing the weights of the rail sections from those which have been the standard of the system. It had been suggested that the increasing severity of service would probably call for the use of a rail of greater weight per yard. The committee concluded, however, that the sections should continue to be of the same weights as those already in use, although a change of radical character was made in proportioning of metal to the different parts of the rail. The design in these changes has been to so apportion the metal as to reduce to a minimum the strains encountered in manufacture—which often have injurious results upon the rails—and to secure the greatest possible resilience and wearing qualities.

IMPROVEMENT PROGRAM

Announced by President Corey while in Birmingham.

Birmingham, Ala., April 13.—Before leaving the Birmingham district April 11, W. E. Corey, president of the United States Steel Corporation, made a short but satisfactory statement in regard to proposed improvements and developments to be made in the southern territory by the Corporation in the near future. Said he:

"Plans approved by the former management of the Tennessee Coal, Iron & Railroad Co. will be carried out practically without change. In addition, the following improvements will be recommended: Remodel blast furnaces Nos. 1, 2 and 3, about redoubling the product of these furnaces, or an increase of 600 tons per day. Install a new 600-ton metal mixer. Build four 100-ton open-hearth furnaces. Open No. 13 coal mines on Pratt seam.

"The above are the principal items. These improvements, of course, involve large outlays for additional boilers, engines and other machinery, as well as improvements and extensions to transportation facilities."

In the party with Mr. Corey making the trip to the Birmingham district the past week were the following: W. B. Dickson, second vice president United States Steel Corporation; Thomas Morrison, director United States Steel Corporation; A. C. Dinkey, president Carnegie Steel Co.; D. G. Kerr, ore agent and director Carnegie Steel Co.; W. B. Palmer, president American Steel & Wire Co.; John Reis, assistant to president United States Steel Corporation; Joseph G. Butler Jr., of Ohio, president Bessemer Association, and president of Brier Hill Iron & Coal Co.

During their stay in the Birmingham district the party was tendered three banquets and automobile rides were frequent. Mr. Kerr met with a little accident by being thrown from a horse and was laid up for a few days.

THE FOUNDRY EXHIBIT AT TORONTO.

Plans for the exhibit of foundry supplies and equipment at the convention of the American Foundrymen's Association, the Brass Founders' Association, and the Associated Foundry Foremen, have been moving on apace. Many members of the Foundry Supply Association, which is the organization making the exhibit, have already taken space in the exhibit buildings; so rapidly is the space being engaged, in fact, that over 75 per cent of that in Machinery hall has already been reserved, and a large amount of space in the Process building.

The extensive arrangements which have been made for this exhibit necessitate the presence of the secretary on the ground immediately, in order that he may look after the details of installing the exhibits, etc., hence Mr. Lane has arranged for headquarters in Toronto and will be there from April 18 until after the convention. The secretary's address will be care of the Toronto Foundry Co., Ltd., Toronto, Ont.

Arrangements have already been made for the installation of a large amount of labor-saving machinery for making and handling molds, for preparing molding sand, and for other work about the foundry, so that this exhibit will certainly be the most complete of its kind that has ever been made. For the first time in the history of the trade, all branches of the iron and brass foundry will be fully represented in operation, including core ovens, and cupola and brass melting furnaces. The still exhibits, which will occupy the Process building, will also be unusually attractive.

The Quincy, Manchester, Sargent Co. announces that, in order to devote more attention to its metal sawing machines, cranes and hoists and car steps, it has decided to discontinue the manufacture of the line of pneumatic compression riveters acquired at the time the Pedrick & Ayer business was purchased. This entire line has been disposed of to the Hanna Engineering Co., Chicago, which will improve the line and be in position to furnish repair parts for such riveters as have been sold in the past.

ELBERT H. GARY*

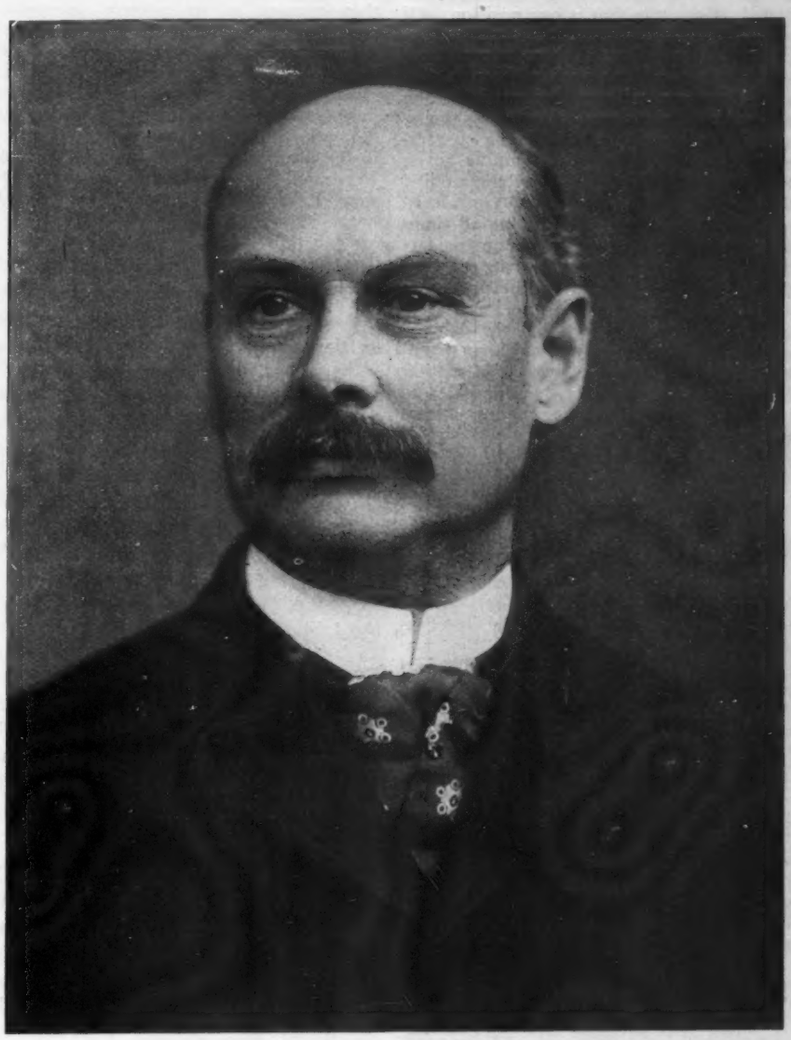
Elbert Henry Gary, chairman of the board of directors of the United States Steel Corporation, and president of the newly organized American Iron and Steel Institute, was born in Du Page county, Ill., about 62 years ago. After attending the common schools and Wheaton College and teaching two winters in the country, he became a law student, and in 1867 was graduated from the law department of Chicago University. He accepted a position with the clerk of the courts in Cook county at $12 per week, and, at the end of three years and a half, was earning $45 a week. He then began the practice of law. He served a term as mayor of the village of Wheaton, where he lived while practicing law in Chicago, and for two terms was judge of the county court. The story of how the practice of law resulted in his becoming interested in the steel business has been told by Judge Gary as follows:

"I became attorney for a number of corporations, a wire company among the rest. In 1891, we thought it would be advantageous to put several wire concerns into one. The work was turned over to me. We organized the Consolidated Steel & Wire Co., of Illinois, with a capital of $4,000,000. It was an enormous enterprise in its day. I bought stock, got interested in the management, and was elected to the board of directors. Seven years later, we took in more mills, increased the capital to $12,000,000 and were incorporated as the American Steel & Wire Co.

"In the meantime, I had purchased some of the shares of the Illinois Steel Co. and had been chosen a director. There was a suggestion that the company ought to buy a railroad which connected several of our plants. I opposed making two bites of one cherry, and urged a wider and more logical combination, saying that I favored a consolidation which should include the Illinois Steel Co., the Minnesota Iron Co., which owned mines, the Lorain Steel Co., whose works were on Lake Erie in Ohio, the Minnesota Steamship Co., which would supply our water transportation; the Duluth & Iron Range railroad, which would take our ore to the lake; the Elgin, Joliet & Eastern railway, and the Mt. Pleasant Coal & Coke Co., of Pennsylvania. My theory was to combine all the units of manufacture and transportation into a single ownership and management.

"The different interests met in New York and came to an agreement. A committee was appointed to carry out the arrangement and to fix prices. Senator Spooner and former Gov. Flower were put on the committee, but did not serve. Robert Bacon, now assistant secretary of the state, and then a partner of J. Pierpont Morgan, and myself were the remaining members of the committee, and the labor fell to us. We called the corporation the Federal Steel Co. and made our capital $200,000,000, a figure which fairly amazed the world of business here and abroad. Mr. Morgan has said that the Federal Steel Co. seemed to be a more stupendous enterprise than did the United States Steel Corporation, capitalized at $1,400,000,000, which followed three years later."

While the Federal company was being formed, Mr. Morgan sent for Gary, told him he had been decided upon for president and persuaded him to sign a contract for three years. Judge Gary had a lucrative law practice in Chicago and was very sorry to leave his many friends in that city. He expected to return to Chicago, but when the United States Steel Corporation was formed, he became an important factor in it, and located permanently in New York City. His official record, in connection with the Corporation and his efforts toward promoting co-operation and conciliation among iron and steel manufacturers are familiar to readers of THE IRON TRADE REVIEW.



ELBERT H. GARY,
President American Iron and Steel Institute.

*First of a series of brief biographical sketches of officers and directors of the American Iron and Steel Institute.

REDUCTION IN PRICES

Is Not Probable in Near Future, Say Judge Gary and Chas. M. Schwab.

In regard to published reports that a reduction in prices of steel commodities was contemplated, Judge E. H. Gary, chairman of the United States Steel Corporation, gave out the following statement April 9:

From all the information at hand, I do not hesitate to say that no reductions in the prevailing prices of steel are contemplated. Certainly that is our position. Of course, prices may be increased or decreased at any time, if there is good reason. I do not think such a thing is possible, however, without due consideration or without previous information being given to all concerned, including customers. If any good reason can be given for changing the price of any commodity, the question will promptly be considered on its merits. Prices should at all times be reasonable and fair. The mere fact that the demand is greater than the supply, that the necessities of the purchaser are great, does not justify an increase in price; nor does the fact that the demand is less than the supply furnish an argument for lowering the price. In neither case would the quantity bought and sold be more or less. What the manufacturers and purchasers both, as a rule, desire is stability of prices—the avoidance of sudden and violent fluctuations. In such times as these, it is natural for an occasional purchaser to seek to influence reductions in prices for his particular benefit and without regard to his future and permanent interests; but it is exceptional. Misrepresentations are sometimes made, and the seller, if not the public, is occasionally imposed upon. Hence the misstatements lately published. Some things may be depended upon at the present time. All these questions will be considered and treated fairly and without prejudice to the interests of the purchasing public. The steel manufacturers are in close and friendly intercourse, and propose to continue these relations. They will not do anything that is contrary to the public welfare; but they will not be stampeded by irresponsible rumors. If the question of reducing or increasing prices shall be raised at any time during the next few months, there will be deliberate and orderly consideration.

On the following day, a similar statement was made by Charles M. Schwab, president of the Bethlehem Steel Corporation, as is given below:

All important interests in the steel industry are united in favor of maintaining prices, and there is no indication of weakening anywhere along the line. If there has been any cutting whatever, it has only been by unimportant people and of so infinitesimal a character as to have no influence whatever on the general situation. Stability of prices has been the dream of the trade for years and this dream seems to be now actually realized.

The large steel consumers are compelled to carry a large amount of steel in stock, and this stock has been purchased at the present prevailing basis of prices. Any cut at this time would, therefore, mean a reduction in the value of such stocks now on hand. For this reason these important consumers are as anxious to have prices maintained as the steel makers are. Small consumers are better satisfied with stable prices for the reason that when there is an open market they are in constant fear that their larger competitors may get the advantage of them, but with prices firmly held they are assured of equal treatment.

I regard the present depression as of a temporary nature. Such depressions are characteristic of the steel market and must be looked for, but they always right themselves in the long run. There is, therefore, no cause for alarm, for with this country in its present prosperous condition the steel market is as certain to recover as the sun is sure to rise. I see no indications whatever of any inclination on the part of any one engaged in the steel business to reduce or cut under competitors in the matter of prices in the near future or for months to come. Personally I would not favor any reductions from the present basis for years to come.

BOND ISSUE AUTHORIZED.

Stockholders of the New York Air Brake Co., at a recent special meeting in Jersey City, authorized placing a mortgage on the company's property to secure an issue of $3,000,000 6 per cent 20-year convertible bonds, in accordance with the recommendation of the directors. These bonds will be dated May 1, with interest payable semi-annually, Nov. 1 and May 1, and convertible into the stock of the company at par at any time after July 1, 1909, and before July 1, 1914. President Starbuck declared that the securing of this subscription of new bonds by the stockholders at 90, which thereby preserved to them all underwriting costs and profits, is considered by the management a substantial recompense to the stockholders for the loss of the current quarterly dividend.

Duty on Galvanized Sheets.—The Board of United States General Appraisers, in a protest of J. J. Moore & Co., San Francisco, has held that corrugated galvanized iron sheets are dutiable at 45 per centum, as articles of metal not specially provided for, plus 2/10 cent per pound for galvanizing, and not at specific rates per pound according to the gage thickness, as claimed by the protestants. Paragraph 131 of the tariff limits the value of sheets, dutiable under that section of the law, to under 3 cents per pound.

The Dimmick Pipe Co. bid $21.70 a ton and the United States Cast Iron Pipe & Foundry Co. $23.90 a ton for pipe for which bids were opened by the Cincinnati board of public service April 2.

GRADUAL RECOVERY

Is Noted by Machine and Structural Iron Builders in San Francisco.

(Special Correspondence.)

San Francisco, April 9.—It is evident on all sides that business has begun to assume normal conditions, and is gradually recovering from the effects of the recent financial flurry. The local machine shops have received orders for work from the mines. Every strike of good ore means additional work for the local foundries. Rawhide is the most recent camp which attracts attention, but while Rawhide is too new to be an important factor in the machinery market, orders are placed each week for mills and crushers and other mining machinery. A few days ago an order was placed with a shop in this city for a 200-ton mill to be installed at once and be ready within 90 days. The same company placing that order has plans drawn for a water system which is to cost upwards of $150,000. The orders for extensive work to the larger manufacturers come from the older camps, such as Goldfield, Tonopah, Bullfrog, Manhattan, Fairview, Wonder, and the rest. Standard equipment of high grade machinery only enters when the permanency of the mines is established, and quantity and quality of the ore justify the outlay.

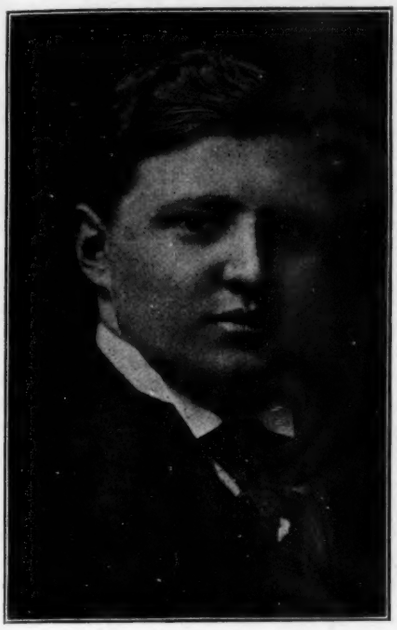
The local lodge of machinists has about 100 members on the unemployed list, as against 700 a few weeks ago, a decided improvement for a few weeks. Structural iron workers continue busy, and few are idle at any time. The number of building contracts in the city is again increasing, and building operations promise to become very active during the spring and summer, especially since the banks are again making new loans. The Southern Pacific Co. is commencing to change its suburban system from steam to electricity, and will employ a large force of laborers and mechanics for a long time. Iron and steel frames for new structures continue on the increase, and find more favor as time advances. More than 100 large buildings with iron frames are in course of construction at present, while fully twice that number is in contemplation and will be started in the near future.

Deposits of securities under the reorganization plan of the American Steel Foundries providing for a reduction of capital stock continue to increase. It is expected that by April 18, about 90 per cent of the stock will be deposited.

NEW OFFICERS.

Riter-Conley Mfg. Co. Reorganization Causes Executive Changes.

Recent re-organization of the Riter-Conley Mfg. Co., Pittsburg, brought about by the death of Thos. B. Riter, has caused some changes among the



JOSEPH RITER,
Secretary.

executive heads of that company, the accompanying engravings showing three of the newly elected officers. H. A. Carpenter, who was elected to the presidency shortly after the death of Mr. Riter, has had an extended experience in gas engineering, engaging in that pursuit after his graduation from Sheffield Scientific Department of Yale in 1891. Mr. Carpenter has been with the Riter-Conley Co. since 1896. The other officers of the company are J. Gilmore Fletcher, vice president; W. L. Jack, treasurer, and Joseph Riter, son of the late Thos. B. Riter, secretary and assistant to the president.

PROGRAM OF CONVENTION OF AMERICAN FOUNDRYMEN'S ASSOCIATION.

Dr. Richard Moldenke, secretary of the American Foundrymen's Association, in an announcement of the June convention which will be held in Toronto, states that a radical change from the usual program is contemplated at this meeting. Instead of reading lengthy papers, live subjects will be discussed, some of which have already been selected, and these will be introduced by eminent foundrymen. Arrangements are already being made for reduced rates with possible stop-over privileges at Niagara Falls. The provisional program follows:

Monday morning, June 8—The exhibition will open.

Monday evening—Meeting of the Associated Foundry Foremen.

Tuesday afternoon, June 9—Formal opening of the convention and exhibition; joint meeting of the American Foundrymen's Association, American Brass Founders' Association, Associated Foundry Foremen, and Foundry Supply Association.

Tuesday evening—Official reception at the city hall.

Wednesday morning, June 10.—Busi-

H. A. CARPENTER,
President.

ness sessions of the American Foundrymen's Association and the American Brass Founders' Association. The exhibition will be closed during this session.

Wednesday afternoon—Business session.

Thursday morning, July 11—Business session of the American Foundrymen's Association. The exhibition of foundry supplies will again be closed during this meeting.

Thursday afternoon—Business session.

Thursday evening—Moonlight excursion.

Friday afternoon, June 12—Trolley ride.

Friday evening—Smoker.

An elaborate entertainment program is being outlined for the ladies, including automobile rides, shopping expeditions and theater parties. The same rule which governed the entertainment of members only, at Philadelphia, will be strictly enforced at Toronto.

MAKE BAR IRON.

Union Rolling Mill Co. Purchases Louisville, Ky., Plant.

By acquiring the plant of the Louisville Bridge & Iron Works, Louisville, Ky., the Union Rolling Mill Co. has entered the Kentucky bar iron and fence manufacturing field. The purchase price was about $75,000. Within the next six weeks the Union company expects to have the plant in operation.

The Union Rolling Mill Co. was incorporated under the laws of Kentucky March 24 by W. A. Bennett, formerly president of the Cincinnati chamber of commerce; A. S. Fenzel, Middletown, O., and W. S. Branlage, Covington, Ky. Mr. Fenzel announces that the principal output of the con-

W. L. JACK,
Treasurer.
(Photo by Matzene & Evans, Pittsburg.)

cern will be bar iron and iron fencing, although it is possible that a special department will be installed for making iron roofing and sheeting.

The plant of the Steel & Iron Aluminum Coating Co., Connellsville, Pa., has been purchased at sheriff's sale by W. J. Wilder, and it is contemplated to again put the property in operation.

CAST IRON PIPE MADE IN PERMANENT MOLDS

Continuous Process of Casting Soil, Water and Gas Pipe at the Rate of 240 Sections per Hour---Novel Method of Gating the Mold and Pouring the Metal

By Edgar Alan Custer.[2]

At the plant of the Tacony Iron Co., Philadelphia, soil, water and gas pipe are cast in permanent cast iron molds, which the hottest iron attainable from the cupola does not destroy. Cast iron pipe is produced in which the supposed evils of unequal heating and cooling not only do not appear, but do not exist. A machine, whereby the casting operations can be carried on continuously, completes the labor saving equipment of this installation.

History of Permanent Molds.

So-called permanent molds are not new. For many years small iron castings have been successfully made in iron molds, and this without great detriment to either the casting or the mold. These castings, however, were invariably very small and were chilled to extreme hardness. Fortunately, it was not necessary to machine them. This limited the use of such molds very materially. Some years ago the Latrobe Steel Co. cast car couplers in iron molds. Within a few months, an article has been published, describing a successful method of making brake shoes in this manner. These shoes weighed about 20 pounds each, and with the exception of steel ingots and car couplers were the heaviest castings made in iron molds. So far as can be learned, this is about the extent of the art. It has been the dream of every foundryman whose trade requires a large number of duplicate castings, to make these castings in molds that would not only survive the process, but would also produce castings that would be marketable and easily machined.

Old Method of Making Soil Pipe.

The method that will be described relates only to soil, water or gas pipe. In the manufacture of soil pipe, iron flasks, cope and drag, are rammed with sand over a metal pattern; a green sand core is introduced, and the cope and drag are clamped together. The pipe is then poured, with the pipe in a horizontal position, and after cooling, the pipe is removed from the flask and carried to the end of the floor where the cores are removed. Then it is carried to the cleaning room where the sand is rattled off, the gates and fins are removed, and after inspection it is ready for shipment. Altogether the pipe has to be handled ten times. In this process the loss is very great. So much depends upon the condition of the sand; it may be too wet or too dry; the molder may ram carelessly, or may pour his iron negligently so that the foundry loss often reaches 12 to 15 per cent. In summer weather the output is decreased 25 to 40 per cent, due to the inability of the workmen to endure the exacting and exhausting labor. Only one heat a day can be poured in any season. In fact, with very few improvements, and these relating mainly to making cores, we are making soil pipe in precisely the same manner and with just as much labor per pipe as was the practice 50 years ago.

[1]Read at the March meeting of the Franklin Institute, Philadelphia.
[2]President, Tacony Iron Co., Philadelphia.

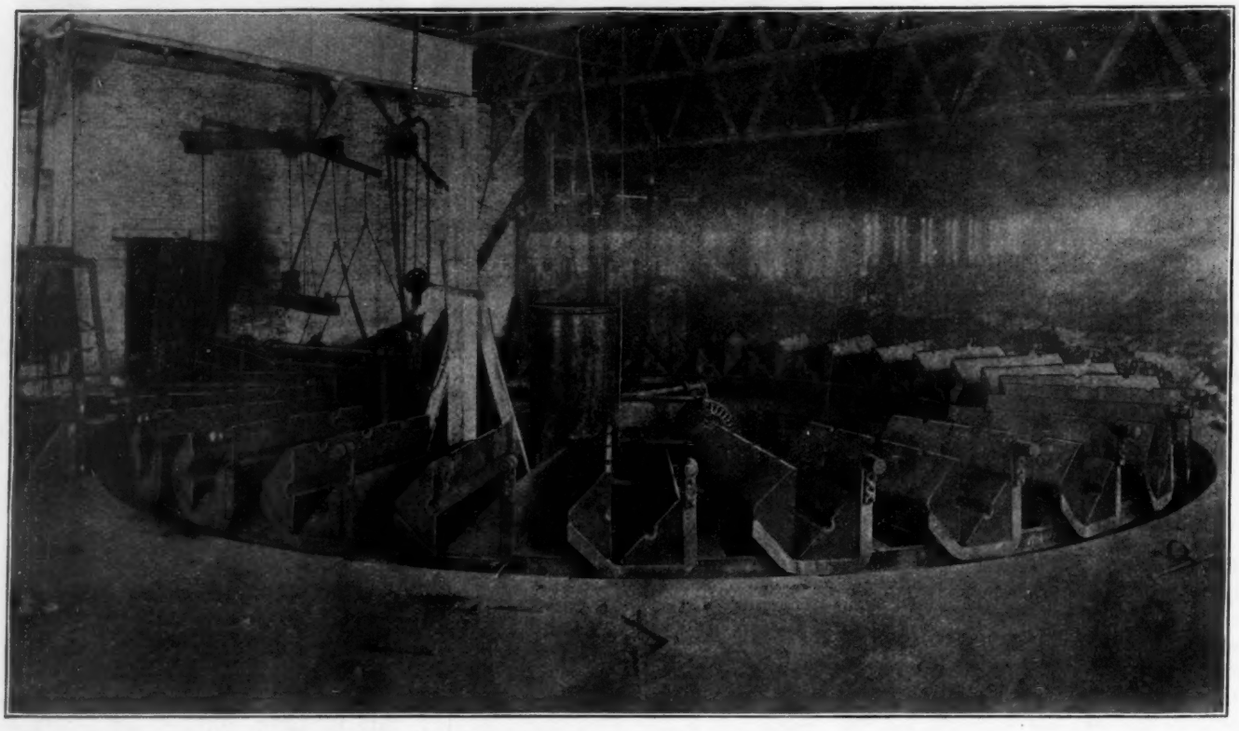


Fig. 1—Continuous Pipe Casting Machine Carrying 30 Permanent Molds.

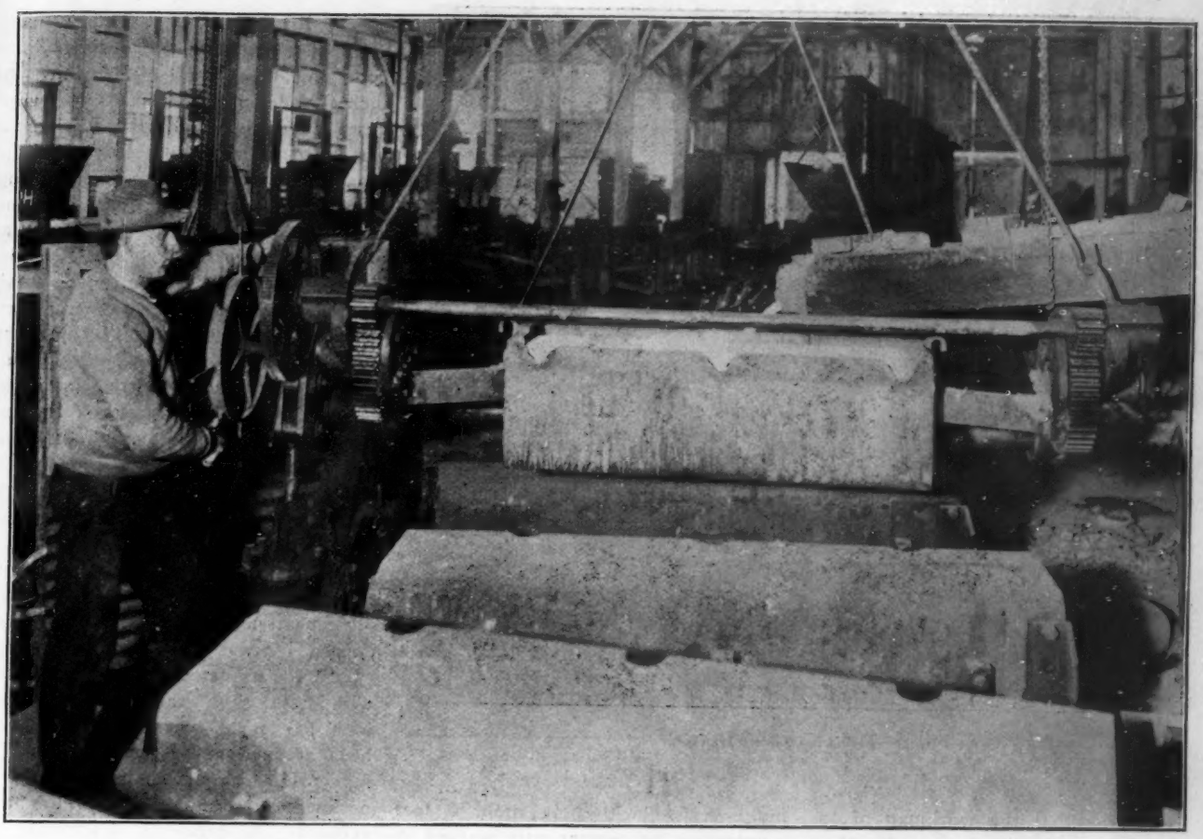


FIG. 2—POURING LADLE WITH THREE LIPS, FILLED DIRECT FROM THE CUPOLA SPOUT.

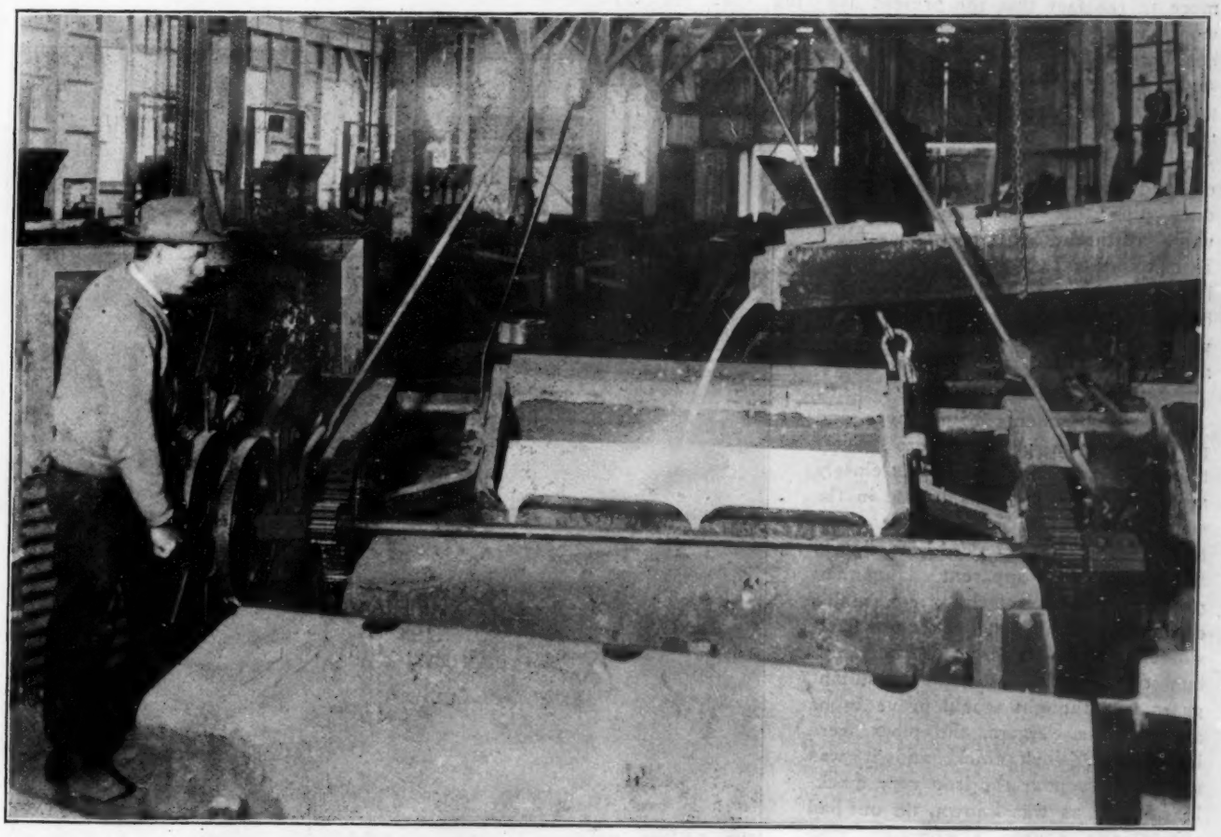


FIG. 3—LADLE IN POURING POSITION, CASTING METAL INTO THE MOLD THROUGH THREE GATES.

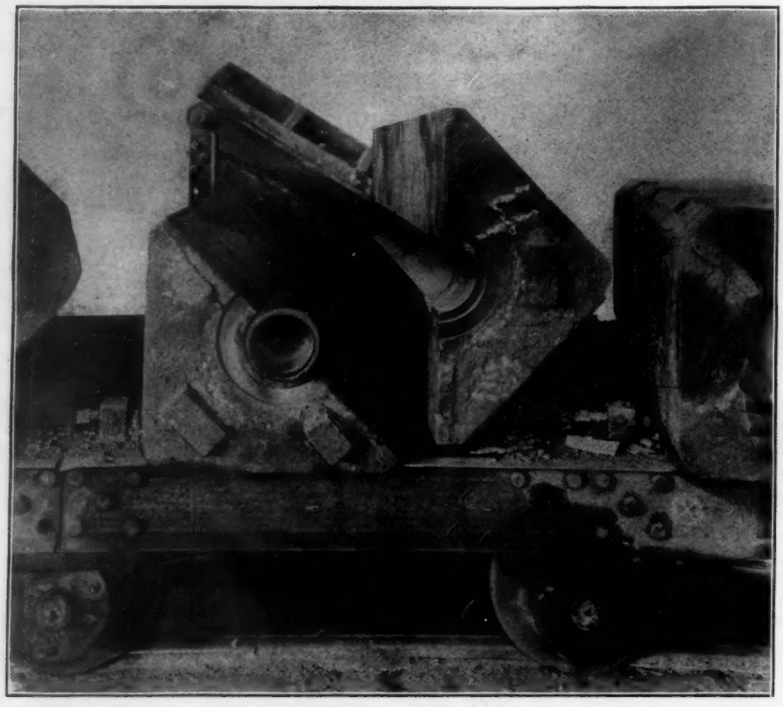


FIG. 4—MOLD CLOSING DEVICE.

It is true that the workman of today makes more pipe in one day than his grandfather did, but this is due more to the fact that the present day workman is working piece work and has become infinitely more skilled in saving the seconds of time for each particular operation and avoiding the useless motions in performing them. Any process that would save the use of sand for the mold and would produce pipe that could be easily cut would of necessity be very desirable. If in addition it would obviate cleaning and chipping and could be run continuously night and day, it would very nearly meet the conditions of an ideal business.

Early Experiments.

When experiments to discover and perfect such a process were undertaken, the first mold made was closely modeled from the flasks in use in the sand process. In fact, all the traditions of foundry practice were closely followed. The apparent danger of pouring molten iron into iron molds encasing a damp sand core, was considered to be serious, and the problem of disposing of the resultant gases was thought would prove to be a great one. Again, the pipes were less than ¼-inch thick, and it was necessary to pour the iron very quickly. So far as was known, no one had successfully poured a complete pipe in an iron mold, and such attempts that had been made had destroyed the mold very quickly. A mold 6 feet long would be permanently warped in a short time, hence it is not surprising that the experiments were approached with considerable trepidation.

First Permanent Mold.

The first mold made consisted of a cope and drag, each 6 feet long, 10 inches wide and 6 inches thick, with gates cut into the drag. This mold was cast of very soft iron and the pipe shape bored out. The pouring holes were tapered so that when the cope was removed the iron in them could be easily knocked out. In order to avoid as far as possible all traces of moisture, the mold was heated to 500 degrees Fahr., an ordinary green sand core was inserted and four men poured molten iron into the gates. These men wore goggles and were swathed completely in wet cloths. We did not then know what would happen. As it turned out nothing happened, not even a semblance of pipe, the gates were too small. A short session with a hammer and chisel made them larger and on the second attempt a complete pipe was poured. It was not a remarkable pipe except for its defects. It was streaked with cold shot, the top was filled with flat spots where the gases had been trapped and it was as hard as flint. After an infinite number of experiments the mold now in use was evolved. A complete description of this mold as it appears on the machine will be given later. After 50 or 60 pipes had been cast in this mold, it

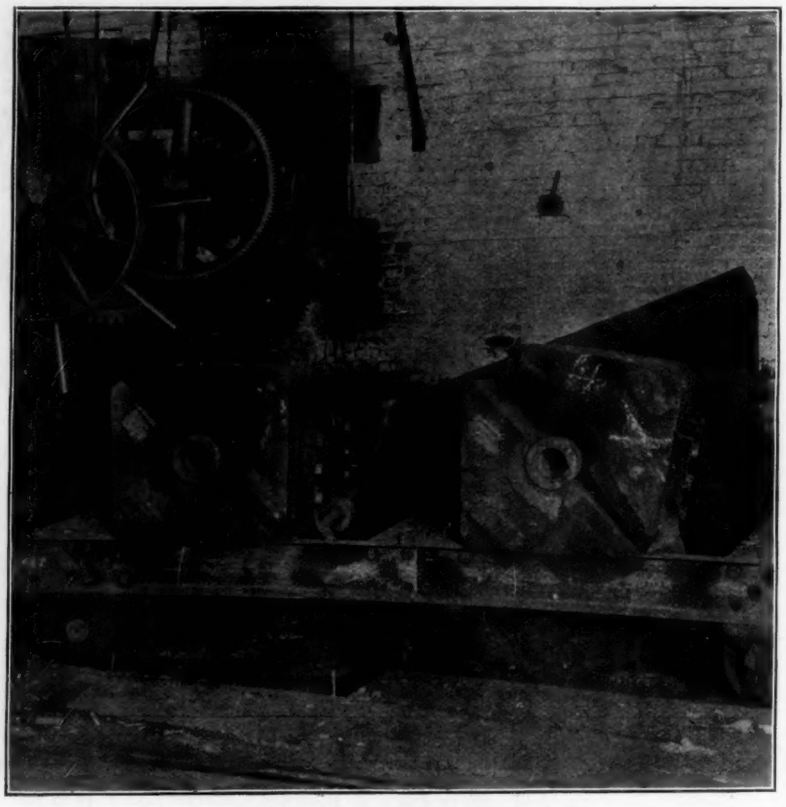


FIG. 5—MOLD OPENING DEVICE.

became badly cracked around the gates and as the process of casting was continued these cracks extended into the barrel of the mold. This we attempted to obviate by casting into a new mold very thin strips of mica, extending throughout the length of the mold and placed radially at intervals around the barrel or mold cavity. The cracks we found in this mold would start as before but would stop when the mica was reached. A good illustration of this effect is shown by the fact that a small hole drilled at the extremity of a crack in a sheet of plate glass, immediately stops the further extension of the fracture. In time, the whole face of the mold would show a collection of fine cracks, most of which could only be seen with a magnifying glass. They rarely ever were more than 1/16-inch deep.

After probably 200 pipes had been cast the surface of the mold in contact with the molten iron resembled an extremely hard graphite. It was dull black in color but did not scale or shell off. In order to thoroughly test the mold, the ends were stopped up with sand and the entire barrel, without a core, was filled with molten iron. This was done 30 or 40 times without any appreciable distortion of the outline. The only care exercised was to take the casting out before heavy shrinkage set in. In order to still further test it, the mold was heated to a temperature of about 1,100 degrees Fahr. in a furnace, but it was found impossible to produce pipe under these conditions. The molten iron danced in the mold like water on a hot griddle and the resultant pipe was a collection of closely knit globules.

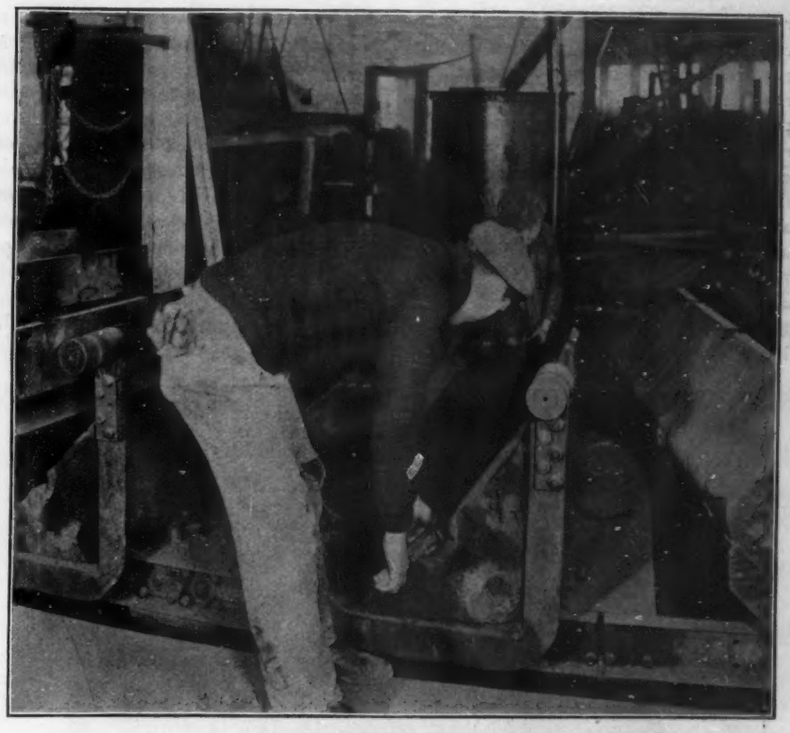


FIG. 6—SETTING THE CORES.

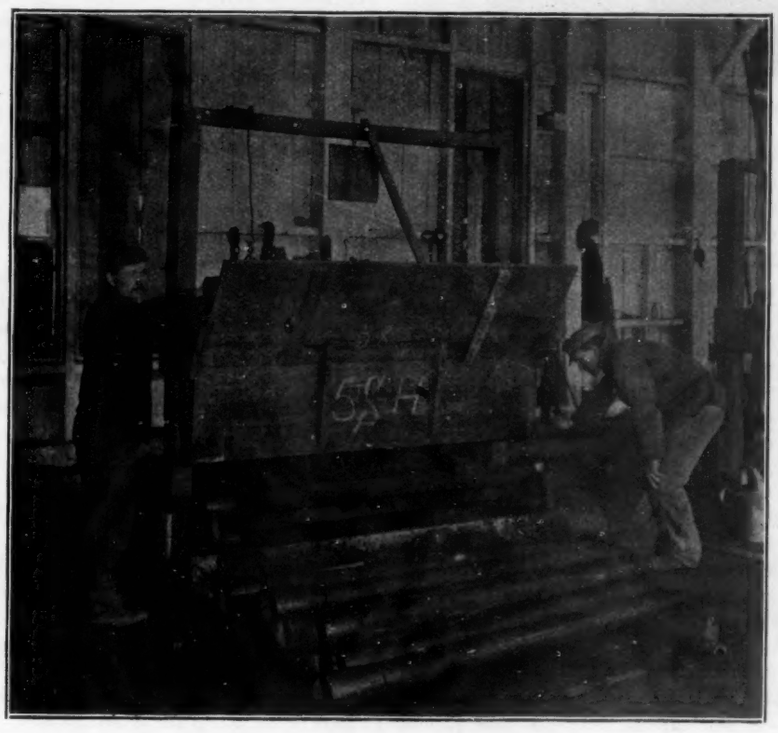


FIG. 7—CORE MAKING MACHINE.

It was found that the safe casting heat of the mold was about 700 degrees Fahr., but that in practical operations 250 degrees Fahr. to 400 degrees Fahr. was the highest heat the molds reached. The actual time in which metal set was carefully noted and the behavior of the cast metal at extremely high temperatures was observed.

Experiments with Various Grades of Iron.

Irons high and low in silicon, sulphur, carbon and phosphorus were cast a great many times and copious notes were taken in each case. A small chemical laboratory was established for this work. In all over 4,600 pipes were cast in a 4-inch pipe mold, 2,700 in a 2-inch mold, and over 1,100 in a 6-inch mold. Not one of these molds shows any signs of deterioration over and above the first cracking as described before; in fact, they are in a far better condition than at the start. Each one has been purposely abused and submitted to treatment that never occurs in practice. A straight-edge laid in the barrel today shows the surface to be perfectly straight and the 4,600 pipes show the original marks of the boring out tool.

Silicon and Sulphur Content of Metal.

It was found that an iron running from 2.00 to 2.25 per cent silicon and high in carbon, produced the greatest

number of perfect pipes, and when cast iron of this silicon had a comparatively low sulphur content, the result was still better. Further experiments showed that powdered ferro-manganese when added to the molten iron, immediately combined with the sulphur as a manganese sulphide, and rose to the top of the liquid mass as a slag. An excess of manganese, however, produced a hardening effect, as it formed with the carbon, a carbide which in itself is an extremely hard substance. These features made it possible to use a high sulphur cast iron, providing its other contents approximated the figures given above.

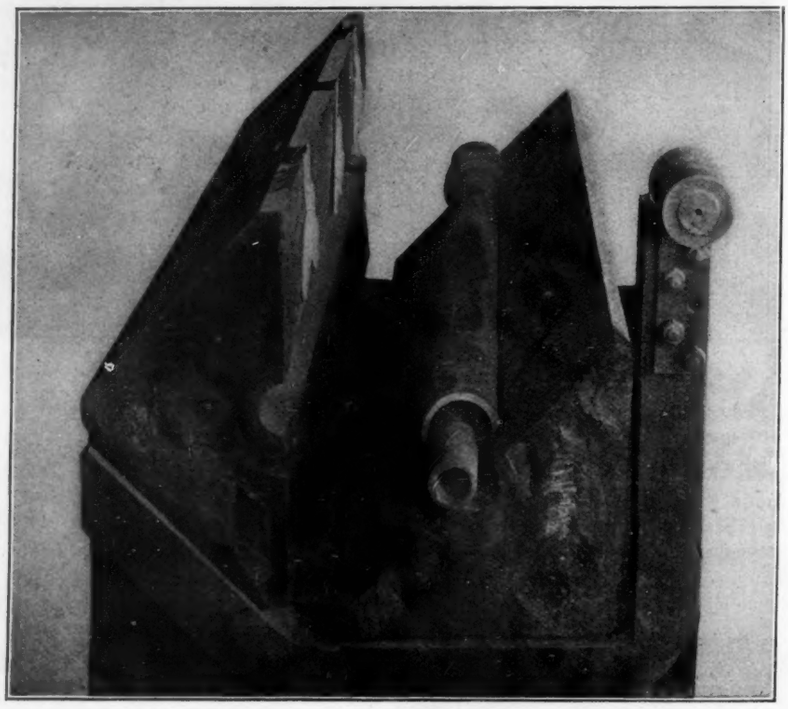


FIG. 8—MOLD OPENED SHOWING PIPE IN PLACE WITH GATES KNOCKED OFF.

Shaking Out the Castings.

It was then noted that pipes that remained in the mold until a dull red heat was reached, were very hard and in most cases were too hard to cut. When they were taken out at a bright yellow heat and allowed to cool normally they were perfect in texture. It was further noticed that when the dull red pipes were piled with the very hot bright yellow pipes, an annealing process was set up that brought the iron in the dull red pipes into a workable condition. This feature of temperature was the subject of a long and patient investigation and the causes leading thereto may be now briefly stated.

Pure iron possesses no fluidity or the property of low shrinkage, nor does it possess varying degrees of hardness. It is obvious then that the characteristics of cast iron, which possesses these qualities in a high degree, are due to the presence of impurities such as carbon, silicon, phosphorus, etc. Carbon is the main element and exists in cast iron as combined and free carbon. The amount of free carbon, which is the principal softener of cast iron, depends principally upon the rate of cooling. If molten iron high in carbon be cooled slowly, the free carbon separates out in the form of graphitic carbon. If this molten iron be suddenly cooled, the carbon is caught before it has time to separate and is held in an atomic condition by the enormous pressure of the surrounding iron. Therefore, the fracture of a pig of iron is generally an index of the rate at which it is cooled. If the suddenly cooled iron be remelted and slowly cooled, it will assume all the characteristics of soft iron. The graphitic carbon will become plainly separated and large crystals will be formed. It may be stated that cast iron in a molten state is a solution of carbon and iron and the mass is homogeneous.

Effect of Silicon.

Silicon in itself confers no benefit on cast iron. It is only its influence on the carbon contents that produces beneficial results. On the other hand, an excess of silicon renders cast iron absolutely unfit for use, making it very hard and brittle. A small quantity through its action on the carbon, reduces shrinkage, increases strength and increases fluidity. Given then cast iron comparatively high in carbon with the proper amount of silicon, the ideal conditions are obtained.

The uses of phosphorus and manganese are too well known to require discussion and play no part in this method except as correctives.

Keeping these facts in mind it may be stated that an ordinary foundry iron very nearly fulfills these conditions, with the exception of sulphur. Molten cast iron is therefore a solution of carbon in iron with the addition of silicon, phosphorus, sulphur and manganese, all forming a homogeneous fluid mass. Now, if this mass be suddenly cooled, it is still homogeneous, the different elements not having time to segregate. If the cooling be continued at the same rapid rate until a temperature of about 1,600 degrees Fahr. is reached the iron becomes very hard and brittle. But if this sudden cooling is carried out only until the iron is set, and is then removed from the cooling influences, thus allowing the iron to lose its heat normally, the result is a structure whose fracture shows a very fine close grain. It is tough, since all its particles are thoroughly interlaced, and it is strong because very nearly all the carbon is held in the combined state. In other words it is homogeneous. Now, let us try to make this vital point plainer.

Rate of Cooling.

In a casting, such as a thin pipe, when cast in an ordinary sand mold, it requires about one minute to cool from the temperature of molten iron to the point at which the metal is set. It is in this period that the detrimental effects as shown in cold cast iron are produced. Phosphorus, sulphur and carbon segregate, and graphitic carbon is formed. Bear in mind that in this period the iron is in a liquid state with all its elements free to move. We may call this the evil period. Once the casting is set, all segregation ceases, and the remaining carbon begins its beneficent work. As the iron loses its heat at a normal rate, annealing and carbide carbon are formed, both of which improve the quality of the metal. Consequently we can call this the beneficent period. Now if we suddenly shoot the molten iron into an iron mold it sets very quickly and the evil period is reduced

in time from 60 seconds to 2 seconds—so short a time, in fact, that all the impurities are held in the position they occupied in the molten mass. The evils of sulphur and phosphorus are reduced to a minimum since they are in practically an atomic condition and are distributed evenly throughout the casting; and since no graphitic carbon is formed, all the carbon exists as combined carbon, with a corresponding increase in its power for carried can be determined to an absolute certainty. It is simply a question of time. The data collected show that a 2-inch pipe can be removed 2 seconds after pouring and should not remain in the mold more than 6 seconds. A 6-inch pipe can be removed in 6 seconds after pouring and should not remain more than 12 seconds. This time depends upon the thickness of the pipe walls. Very thin pipe would require not only a shorter as to the making of other iron products. A suitable iron must be provided if the very best results are to be obtained. This statement applies to any branch of the foundry business and is not set out as a new discovery. What is claimed and demonstrated is, that a poor iron is improved and rendered suitable for the work in hand.

Continuous Casting Machine.

With the data obtained the work of designing a machine that would oper-

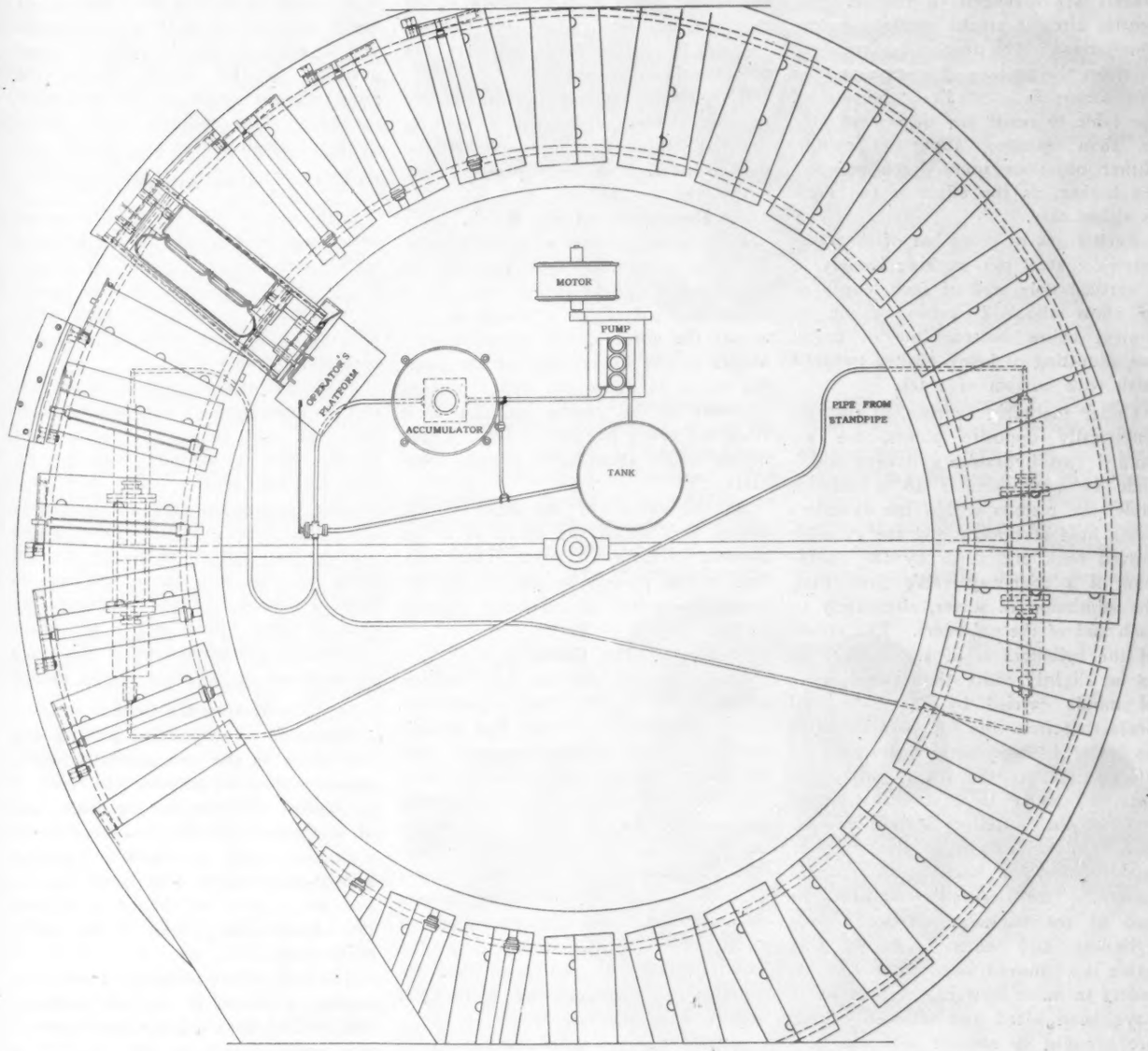


FIG. 9—TABLE PLAN, PIPE CASTING MACHINE.

improvement. If the casting, after it has passed the evil period, is removed from the cooling influence, in this case the iron mold, and allowed to cool normally, the ideal conditions are obtained.

Chilling cast iron to the point of extreme hardness is purely a mechanical process and the point to which the process of sudden cooling can be time in the mold, but should be cast of iron higher in silicon. The reason for this is that silicon by its action on the carbon, keeps the iron in a fluid state longer than normal. Every foundryman knows there are irons in which it is impossible to produce a chill, and there are others in which it is impossible to prevent it. The same limitations apply to making pipe ate continuously was begun. The experiments had shown that when pipes were cast in a mold every 8 minutes, the temperature of the mold never rose above 450 degrees Fahr., even if the operation were continued for hours. If pipes were poured every 2 minutes, the temperature of the mold rose rapidly, and at 900 degrees Fahr. it began to warp. In order to

follow the best conditions and avoid the worst, this apparatus was designed.

Construction of the Table.

The machine, Fig. 1, consists of an annular table or ring, approximately 40 feet outside diameter, carrying 30 molds, arranged at equal intervals thereon. The table is constructed of two concentric rings of channel beams, connected with 30 cross pieces or trucks, each of which has two wheels having roller bearing axles. These wheels are arranged to run on concentric circular tracks set in concrete foundations. The tracks are arranged as if on the surface of a cone and by this means is created a tendency of the table to resist any movement other than rotating about its center. Either outer or inner track may be the higher, as the effect is the same in either case.

Each truck or cross bar of the table carries a steel pin working loosely in a vertical hole, and of such length as to allow about 2 inches of pin to project below bottom line of truck, but admitting of being pushed up until flush with bottom of truck.

Under the table or ring, at two diametrically opposite points, are arranged two hydraulic cylinders which slide in ways similar to a planing table, the pistons within the cylinders being held stationary and the cylinder moved back and forth by the operation of a four-way valve controlling the admission of water, alternately to each end of the cylinders. The stroke of the cylinders is of such length as to be slightly more than the spacing of molds carried by the table and projecting from the top of cylinder is an inclined plane surface designed to lift the pins in the trucks, when the cylinders move in a direction opposite to the required motion of the table, and to allow a pin on each side to fall, after the inclined surface has passed. This occurs at or near the end of the backward stroke of the cylinders, and when the controlling valve is so moved as to cause the cylinders to move forward, the pins which have been lifted and allowed to fall are brought in contact with the projections on the cylinders and hence the table is carried forward by the motion of the cylinders, a distance equal to the spacing of the molds, and the cylinders are ready for another return or back stroke to engage the next pins, thus intermittently moving the table ahead one space, at each cycle of the cylinders.

The center of the table is left open for the location of hydraulic pumps, operating valve reservoirs, etc., required in imparting motion to the table. This table makes one complete revolution every 7½ minutes and consequently produces 30 pipes in that time or 240 pipes per hour.

Mold Opening and Closing Device.

At certain points about the table are arranged closing and opening devices, Figs. 4 and 5, which are designed to close the mold, or bring the cope side down to its place on the drag side, without shock, after the cores are set in place, and to open the mold or lift the cope after the pipe has been poured.

Between the closing device and the opening device is located a pouring device, Figs. 2 and 3, to receive the molten metal from the cupola and pour it into the molds.

Description of the Molds.

Each mold consists of a rectangular block of cast iron, approximately 18 inches wide and 18 inches high, by 6 feet long, parted on a diagonal line across the corners, and provided with hinges at the lower edge of the parting so as to allow the upper portion or cope to be swung up and back from the lower portion or drag. These molds weigh about 6,500 pounds complete.

At the center of the mold is the cavity into which the metal is to be poured, to form the pipe. Thus one-half of the pipe is formed in the upper and one-half in the lower portion of the mold.

The Gates.

Gates are cut in the face portion of the lower part or drag of such size and shape as to receive the molten metal from the ladle and guide it into the mold. Three such gates are used, each dividing into two portions and so entering the cavity of the mold at six points.

These gates are so shaped as to receive the shock of the falling stream of molten metal at a point outside of the mold cavity, and convey it into the mold quickly but gently so that the core is not damaged by a rush of molten metal against it.

At the highest point of the barrel of the mold a small groove is cut, extending throughout the entire length of the barrel. This groove, which is quite small, being only ⅛-inch wide and deep, is intended to receive any gases or air which may be trapped in the mold, and so avoid the formation of flat spots at the top of the pipe. The resultant ridge not being prominent is not an objection but rather adds to the strength of the structure.

On one end of each mold is carried an arm rigidly attached to the upper or movable half. This arm extends under the mold and is of such form that when the mold is open, it forms a rest for the movable half, holding it in such position as to allow of any work such as getting cores, removing finished pipes, cleaning, etc. On the end of this arm is a steel roller which is caused to travel down an inclined plane by the rotation of the table carrying the mold. This inclined plane is arranged to receive the roller at its higher position when the mold is open, and to guide it smoothly to its lower position, by this means closing the mold without shock or jar to disturb the core. This inclined plane constitutes the closing device.

Core Arbor.

Each end of the mold is provided with rings or bushings which are used to support the core arbor in a precisely central position in the cavity of the mold, so that the pipe when finished shall have uniform thickness of metal at every point.

The core arbor consists of a cast iron hollow cylinder somewhat longer than the pipe to be cast and about ¾-inch less in diameter than the inside diameter of the pipe. It is perforated throughout most of its length, by small holes to allow any gases formed by contact with the molten metal to pass into the arbor and so have free vent to the air through the ends of same. Each end of the arbor is accurately machined to fit the rings or bushings in the ends of the molds.

Making the Core.

The core is made by placing the core arbor in the core machine, which consists of a support for the ends of the arbor, semi-circular in form, and of a diameter to fit the arbor ends; a shaking screen arranged to sift sand, and a guide to drop it upon the arbor, and a knife, so shaped as to form the sand to the outline of the inside of the pipe.

The core arbor after being wet thoroughly is placed in the end supports, and rotated by a crank-shaped piece of iron held loosely in one end by an operator. At the same time another operator shakes a sieve suspended over the arbor and previously filled with sand, tempered to the proper degree with water. This sieved sand is caused to fall directly upon the wet, rotating arbor and clings to it. The surplus sand is scraped away by a steel knife held at the proper distance from the arbor to make the finished core of the diameter and shape required. When sufficient sand is on the arbor to make

a full and complete core (which requires about 5 seconds), the core is lifted from its supports, and is ready for use. No further treatment of any kind is needed, and the core is placed in position in the mold which is then caused to pass the closing device, bringing the upper portion down in place, and the mold is ready to receive the metal.

The Ladle.

A ladle is provided to receive the metal as it flows from the cupola. This ladle is arranged so that it can take a position high enough to allow the molds to pass freely under it, or it can be lowered into a position between two adjacent molds so that the pouring spouts or lips of the ladle are very close to the pouring holes of the mold.

Pouring the Mold.

As the table rotates and brings a mold, which has passed the closing device, into pouring position, the ladle automatically drops into this latter position with the lips close to the pouring holes. The ladle is then tilted to pour by the operator, but in tilting it rotates around a center line which passes through the pouring lips, and hence the points of pouring do not move; and the streams of metal are guided directly into the pouring holes through the various gates, into the mold, and fill it completely, compressing any air or gas which may be trapped into the groove provided at the highest point for that purpose. If no gases are trapped, which, strange as it may seem, is usually the case, this groove is also filled with metal and forms a slight rib running the length of the pipe.

When the pouring operation is complete and operator tilts the ladle back, it automatically rises to its higher position, so that the next mold may pass under it and assume the pouring position.

The mold, being now filled with metal, is held long enough to allow the metal to set enough to hold together, and then opened by passing the opening device, which is just the reverse of the closing device; the roller on the end of arm or mold, being guided up an inclined plane, thereby lifting the upper half or cope side and swinging it away from the lower or drag side.

The pipe, which is still a bright orange color, is lifted from the mold and placed, after removal of gates, with those previously cast, in piles, to cool slowly, when the core arbor is withdrawn and returned to core machines to be used again.

THE NUGENT FRICTION CLUTCH.

A novel friction clutch, simple in construction, has been designed by Richard C. Nugent, Cincinnati. The clutch is shown engaged and disengaged in Figs. 1 and 2, respectively.

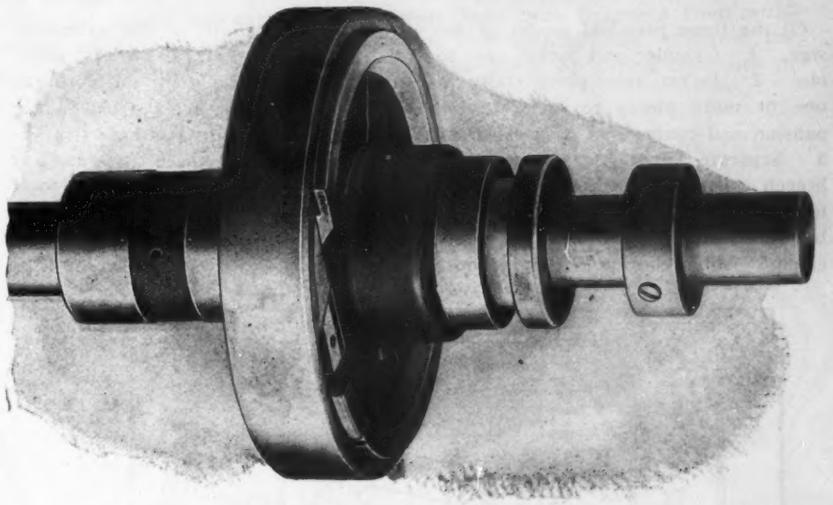


FIG. 1—NUGENT FRICTION CLUTCH.

The surfaces of the operating steel parts, including the wedge, radial pin and feather key, are all hardened, and wear is reduced to a minimum. The friction rim, having a recess for the distribution of oil, is shown at 1, Fig. 2. The pulley split or solid, is attached to this. The sleeve, when the clutch is disengaged, rides free on a shaft. The friction ring with the wedge affixed to the latter side of one end, is shown at 2. When expanded this ring has complete frictional contact on its outer surface with the inner surface of the friction rim. The friction block shown at 3 is fastened to the shaft. The steel insertion set in its face is slightly tapered on the side, meeting the end of the friction ring, and the ring when expanded by the radial wedge, rises upon the slope of this steel insertion, until complete frictional contact is had between the rim and the ring. The wedge and frictional pin are shown at 4. The wedge, when forced outwardly by the slipping of the feather key along the shaft, expands the friction ring. The spool carrying the tapered feather key is shown at 5. When thrown in to engage the clutch, the spool forces the tapered end of the feather key under the rounded end of the radial pin and operates the wedge. These clutches are furnished with either metal to metal or metal to wood contact. The Cincinnati Iron & Steel Co., Cincinnati, formerly the Cincinnati Iron Store Co., has exclusive control of the entire output of the Nugent Tool Co.

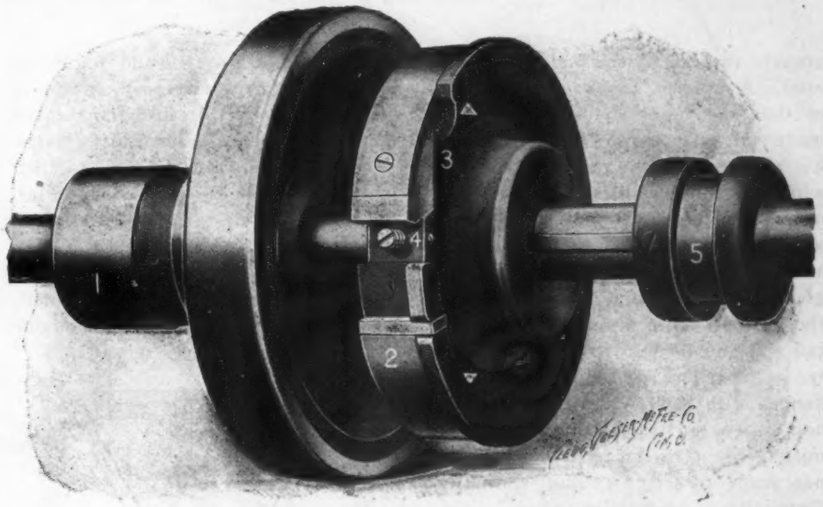


FIG. 2—NUGENT FRICTION CLUTCH DISENGAGED.

STANDARD DESIGNS AND CONSTRUCTION OF LARGE GAS ENGINES---II

By F. E. Junge.

Of the three principal modes of design: 1. Cylinder and jacket cast in one. 2. Jacket split peripherally at one or more places to facilitate expansion and contraction of the system. 3. Separate liner fitted into the breech end of the jacket casting, permitting the choice of specially suitable material and allowing the exchange and reboring the cylinder by the total length of the cylinders, and also to prevent valve disks, when torn from the stems by the constant hammering on the seats, from falling into the cylinder with destructive effects. None of these suppositions proved sound. The reduction of total cylinder length is inconsiderable and valve disks are not torn from their stems. But the parts in the immediate vicinity of pockets and lugs connecting the inner barrel with the outer walls are most liable to fracture. And the residual burnt gases which assemble in the dead spaces, owing to their excessive temperatures are liable, during compression, to cause premature explosion of the fresh charge. Better scavenging is secured by giving the combustion chamber a clean cylindrical or annular form, by properly timing the opening of the exhaust valve and by installing the exhast pipes in such manner that the inertia of the column of burnt gases helps to withdraw from the cylinder its residual contents.

Parts of the cylinder that appear weak can be suitably strengthened by means of tie rods or compression bolts. These bolts were employed originally in repairing cylinders that had cracked. Now they form an intrinsic piece of the construction. The idea is to produce initial pressure stresses in longitudinal as well as in axial direction which counteract the tension forces that occur when the cylinder is heated, thus producing by mutual counteraction of the two forces a state of equilibrium. Of course, the heat efflux from the system is reduced by these bolts and it remains to be seen which effect is the less harmful. Contraction rings are similar contrivances. They may be placed around dangerous parts of the cylinder, being either forged or rolled with a larger diameter.

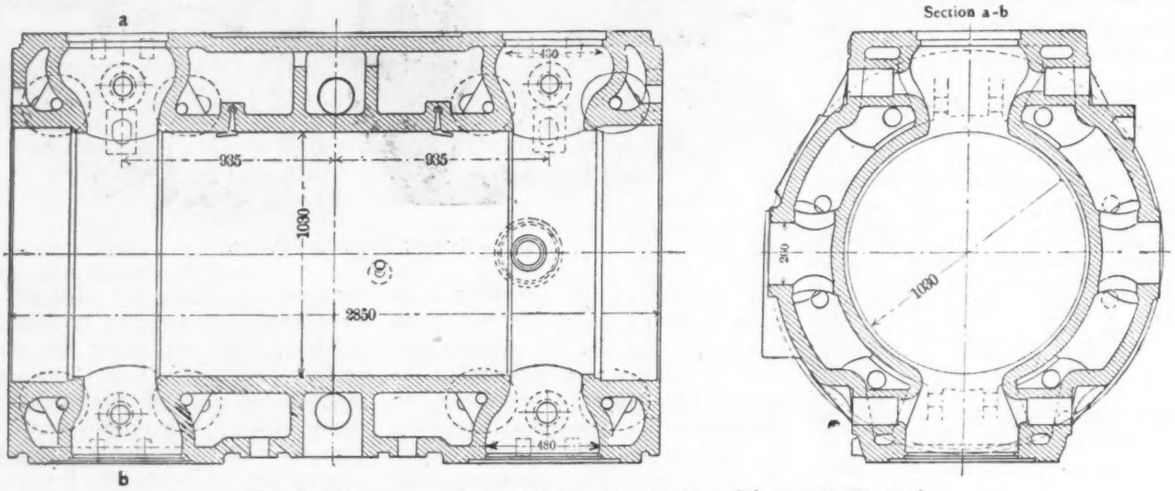


Fig. 6—Cylinder of Double-Acting Gas Engine (Nurnberg Patent).

proper—the first is the one most often used. A novelty has been introduced in that the outer cylinder walls are made thick so as to fit them better for transmitting the heavy stresses, while the inner walls are kept thin in order to increase the cooling influence of the jacket water. Another feature adopted by some builders consists in giving the end flanges which connect the cylinder with the main frame or tail end and distance piece, respectively, a tapering form. Cone shaped flanges with a minimum of flange section seem to be superior in transmitting great forces from outer to inner walls directly without springing. Simplicity, symmetrical form, wide water spaces, ample diameter of curved edges are the principal requirements to impart elasticity to the system. Therefore ribs, especially longitudinal ones and others which are apt to make the walls inflexible must not be employed. See Fig. 6.

There is also a tendency to discard the valve pockets, which were adopted originally with a view to reduce there-

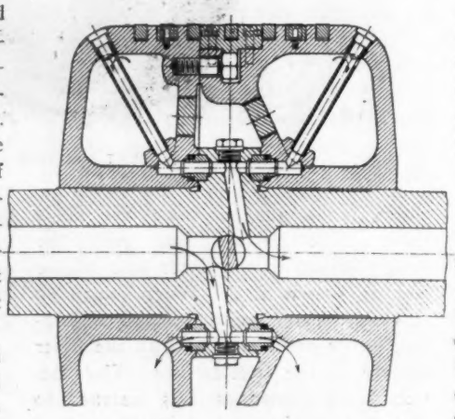


Fig. 7—Gas Engine Piston (Schuchtermann & Kremer).

The abandoning of valve pockets or, in any case, their less rigid connection with the outer walls is one of the main reasons that of late years few instances of cracked cylinders have been heard of. In exceptional cases, where they did occur, those who have investigated the matter are agreed that the cause of the breakage had nothing to do with the construction but was to be attributed to the pressure of water in the cylinder,

Editor's Note.—The first instalment of this article appeared in The Iron Trade Review of March 26, 1908.

to blow holes, and to the settling of dirt in corners and edges of the water space. In most cases, fractures are due to insufficient cooling caused by the use of uncleaned cooling water, separating out its dirt at the resistances and obstructing the path of flow.

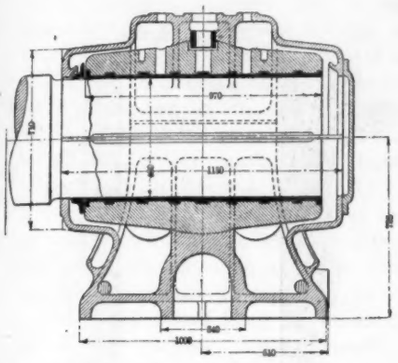


FIG. 8—OUTER BEARING FOR SUPPORTS OF GENERATOR (NURNBERG).

Altogether, internal temperatures in modern large gas engines are kept within very moderate limits, cooled as the cylinders are externally by the jacket and internally by covers, piston and rods.

Piston.

Experience has shown that it is not advisable to stiffen pistons with ribs, especially not with transverse ones, since these, as in the case of cylinders and covers, are often the cause of fracture. It was rather difficult to find an all-round suitable form of design. According to Reinhardt pistons broke both when they were made in one or more pieces and when they were low and high in tensile strength. With the thickness of walls necessary to transmit the energy of the explosion, the initial stresses in pistons are already dangerous, wherefore it is necessary to retreat the cast steel pistons after casting. With pistons in two parts, great attention must be given to the water-tight joint to prevent leakage of the cooling water, the pressure of which is between 44 and 74 pounds per square inch at the circumference of the piston, as even the smallest leakage prevents the formation of the electric spark necessary for ignition.

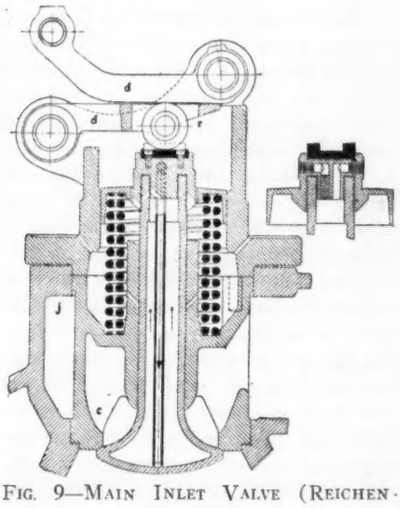


FIG. 9—MAIN INLET VALVE (REICHENBACH).

Finally, the fixing of the piston on the rod is an important point. The old method of securing the piston to the piston rod by a screwed end and a nut may be employed if the materials of the rod and nut are of very different hardness; otherwise, as proved by experience, a slackening of the nut is often impossible. The firm of John Cockerill, Belgium, employs a construction in which the two halves of the piston are pressed against a flange forged on the piston rod, by small screws, which can easily be slackened. An even better design is that adopted by the firm of Schuchtermann and Kremer, Dortmund, in which the screws that serve to connect the two halves of the piston are located quite outside the realm of the cooling water and require no packing at all. After they have been tightened from without, the opening that contains the nuts is closed by a ring composed of two parts, which are fastened by a few small screws to the body of the piston, whereupon the piston rings are secured in place. See Fig. 7. The cooling of the piston is now generally so arranged that the cooling water enters the rod at one end and flows out at the other. Back-flowing is avoided by a pipe which is fitted in the bore of the piston rod. In tandem engines this arrangement is either on each cylinder, or the cooling water is allowed to pass through both rods and both pistons, one after the other. In the first case the cooling water must enter at a pressure of from 2½

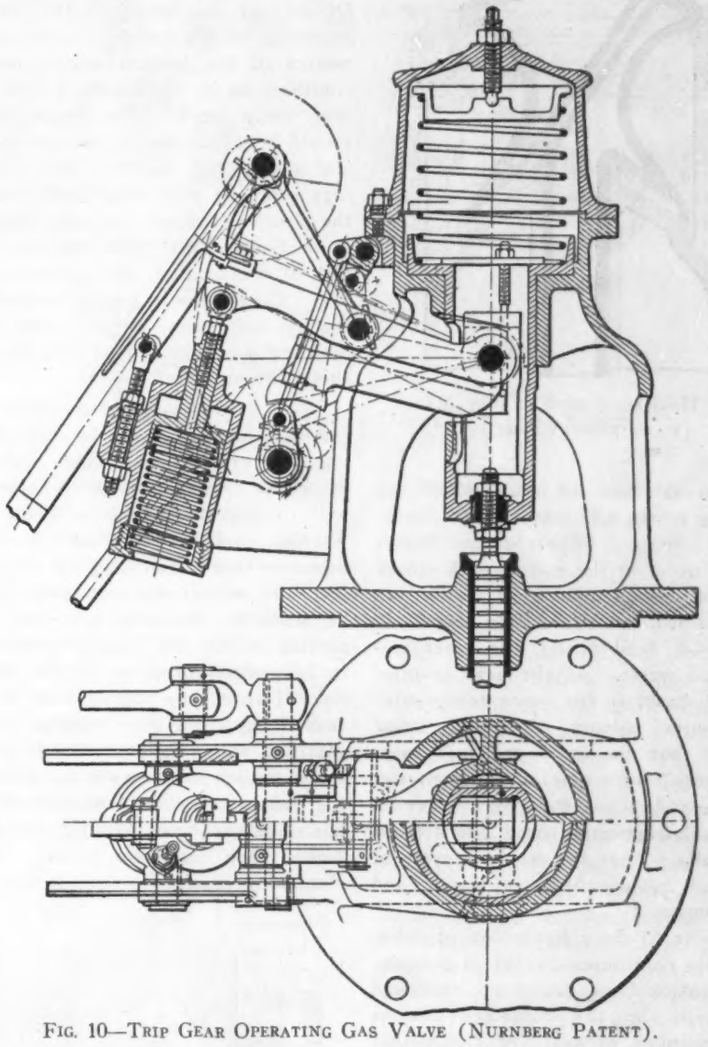


FIG. 10—TRIP GEAR OPERATING GAS VALVE (NURNBERG PATENT).

to 3 atmospheres, and in the second from 4½ to 5 atmospheres.

The firm of G. Luther, of Braunschweig, arranges for the inlet and outlet of the cooling water at the same end of the piston rod, in its double acting engines. This, owing to the necessity of having an inner return pipe, is regarded as a less durable construction.

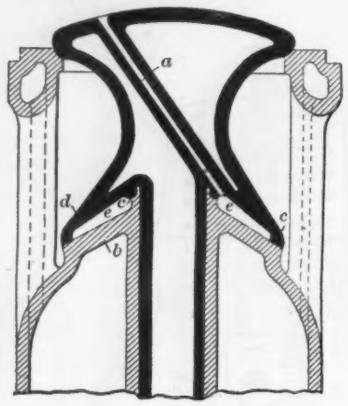


FIG. 11—BALANCED EXHAUST VALVE (PAWLIKOWSKY-GORLITZ).

But by avoiding the employment of stuffing boxes it is simpler than the ordinary design. The inertia forces which occur at the end of each stroke when a certain number of revolutions is attained, will rend and expel, in the inner dead center, the inner column of water. At the next reversal of the stroke in the outer dead center the outer column of water, being longer than the inner one, will enter the inner return pipe at the front end of the rod, while the check valve in the back supporting head opens automatically. Thus the whole process of internal cooling becomes simple and automatic.

Similar to the construction of cylinders the continuous change of pressure and tension forces which are exercised internally by the combined actions of the influx of heat and the weight of oscillating water, may be compensated by the employment of longitudinal connecting bolts producing external pressure stresses. The provision, for strengthening plates, of ribs and especially the placing of these on the surface side which is subjected to tension forces is a grave mistake which will invariably lead to fracture.

Crank and Bearings.

Owing to the high internal pressures attained in the working process of large gas engines the dimensions and weights of crank shafts become much larger than what is common in steam engine practice. At the same time the difficulties of steel works, in turning out these parts, are greatly increased. Crank shafts are forged from solid steel blocks the weight of which runs up to 65 tons and more per piece, while the weight of the finished crank is about half that amount.

The proportioning, according to the duty and service which an engine is to perform, of the bearing surfaces, and their lubrication requires the most careful consideration of the designer. Of no less importance is the proper balancing of the heavy reciprocating masses of the tandem engine, which continues to be the standard type for four cycle work. The crank shaft should be adjustable in two directions and should run in white metal bearings equipped with ring lubrication of the positive feed and regulable temperature type. Two rings, one on each end of the bearing, are preferable to one. They allow a better control of the oil admission, at the same time avoiding a weakening of the bearing shells through perforations.

When driving large alternators special care must be taken in dimensioning and erecting the outer bearing, otherwise trouble will be experienced with overheating, owing to insufficient wearing surface. The outer bearing becomes thus very long, up to three feet and more, and provisions must be made to the effect that the supporting shells can adjust themselves in tangential direction to the elastic line. Hence they should have a ball shaped support. The bending of the shaft by the weight of the generator spider, which serves as a fly wheel at the same time, is compensated by mounting the outer bearing somewhat higher than the main frame. When combining engines in twin fashion the two outer bearings are raised by some tenths of a millimeter, in order to secure perfect alignment. See Fig. 8.

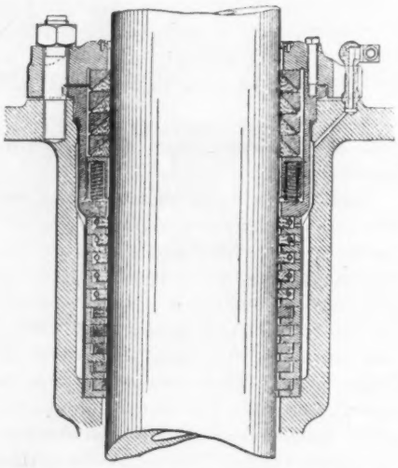


FIG. 13—REMOVABLE STUFFING BOX (ELSASSISCHE MASCHINENBAUGESELSCHAFT).

Valves and Gear.

See Figs. 9, 10 and 11. While the inlet valve when properly designed has never given any serious trouble the exhaust valve is still the most vulnerable organism of large gas engines. Therefore all attempts of builders center in the desire to keep this part well cooled and to make it readily accessible and easy to remove. Not only are the exhaust valve and its cage arranged so that they can be inspected, cleaned and repaired without taking down any of the exhaust pipe connections, but there are two firms, Schuchtermann & Kremer, and Korting, who have gone so far as to abandon the standard form of four-cycle design—inlet and exhaust valves placed diametrically opposite on top and bottom ends of cylinders—and have arranged the exhaust valve side ways, so that it can be taken out quicker, without being obstructed by the piston rod above. To reduce the stresses which are exercised on the exhaust valve and cage, by the gas pressure and gear respectively, during the period of opening (40 to 60 pounds per square inch), either a small relief valve is provided, which opens earlier than the main exhaust, or what is better and simpler, the exhaust valve is balanced. One firm employs exhaust slots as an auxiliary means for reducing the end pressure of expansion and for expelling the main portion of the hot gases, a construction which is reliable and effective but for the considerable increase in total length of cylinder and engine cannot be commended. Tandem engines especially in combina-

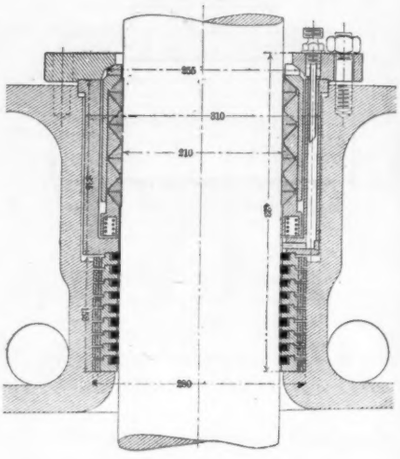


FIG. 12—STUFFING BOX.

tion with blowing cylinders are already very long, and the larger the floor space which they occupy, the less pronounced becomes the advantage which they possess over steam-turbine-driven blowers.

Reference has already been made to the practice, with gas engine installations having a straight line of exhaust piping, of having the opening of the exhaust begin about 15 per cent in advance, and prolonging it somewhat beyond the end of the stroke, during which time the admission has commenced. At this juncture the burnt gases have attained a high velocity which causes a powerful suction in the cylinder. Atmospheric air rushes into the explosion chamber, more or less completely sweeping out the burnt gases, which would hang in the vicinity of the sparking plug and tend to spoil the ignition. It should be remembered, however, that the useful effects of an arrangement of this kind are entirely dependent on local conditions of installation.

Stuffing Boxes.

See Figs. 12 and 13. With pistons supported through the rod by external crossheads which run on well lubricated slide ways with little wear and being capable of adjustment, it is evident that stuffing boxes do not assist appreciably in guiding and carrying pistons and rods, but serve as packing members only. Most packings permit a movement of the rings in a direction perpendicular to the axis of the cylinder, some allow also for a slightly inclined motion of the rod. This is quite commendable since with curved piston rods there is the natural tendency to return into the original bent condition, and with the combustion process along such return it is quite possible that undulatory fluctuations of the rod may occur.

It might happen, then, even with proper cooling and ample lubrication of the packing rings, that in the course of time the clearance between the packing rings and the stuffing box becomes filled up with burnt residues; therefore it is necessary, from time to time, to remove the packing for cleaning purposes, and for this reason it is advisable to make the stuffing box a separate and easily removable part and not continuous with the cover. Packing rings made of cast iron or of suitable white metal are either self-springing or are cut in several pieces, being pressed inward by special springs so as to bear on the rod. All details of modern gas engine stuffing boxes can be studied from the accompanying drawings.

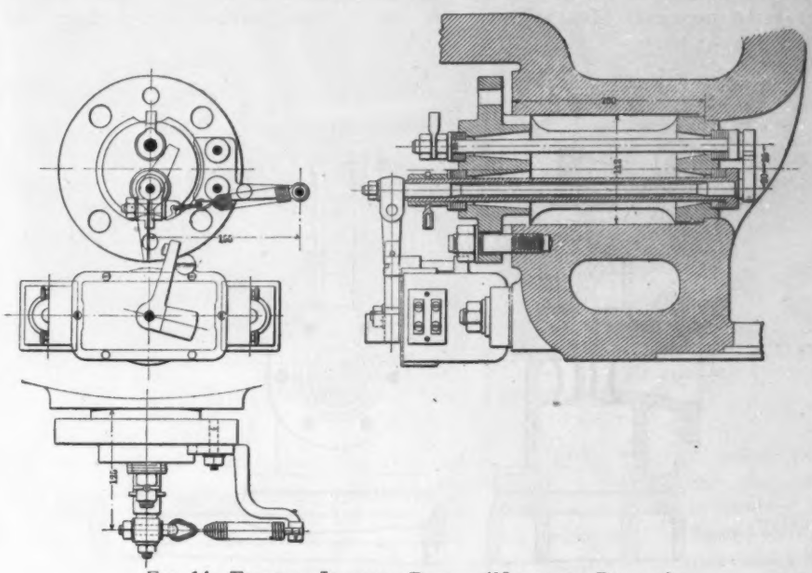


FIG. 14—ELECTRIC IGNITION DEVICE (NURNBERG PATENT).

Ignition.

By far the majority of firms employ the well known magneto system, in which the opening spark of an electric current is used to inflame the compressed gas mixture. The current is either derived from a small battery or from a special motor generator which is supplied with the engine. In most electric igniting devices of this nature the movable electrode, mounted in the igniting chamber, is fixed to the armature of the electro-magnet. Therefore the spark contact is broken immediately upon the attraction of the armature, causing the spark between the movable and the fixed electrode very often to occur too early—that is before the current through the electro-magnet and spark-contact has reached its maximum value—the consequence of which may be a spark insufficient for enforcing explosion of the gases. This disadvantage is caused by the circumstances that the armature is attracted less the farther it is removed from the electro-magnet. The weakness of this attractive force causes a proportionately slow movement of the movable electrode. As, however, the rapid opening of the spark gap has a marked influence upon the nature of the spark, it can be seen that the above mentioned contrivance is un-

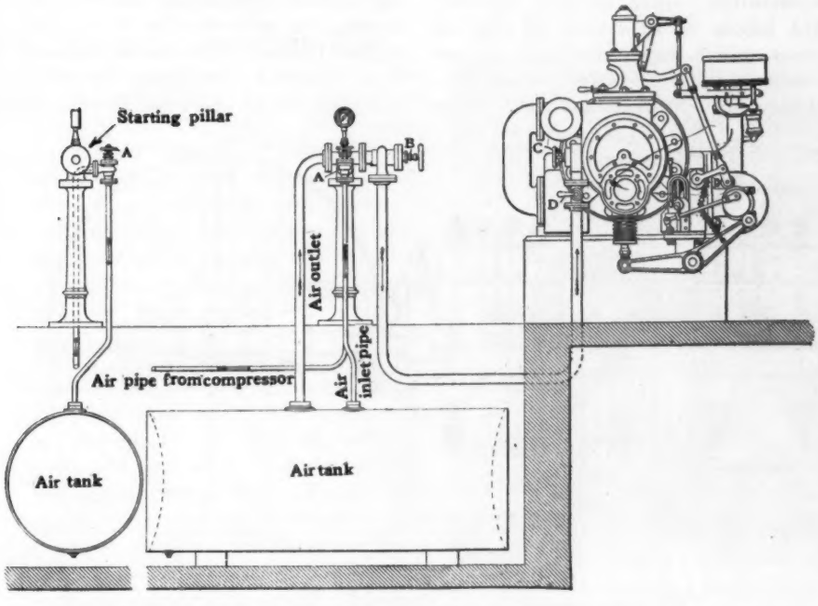


FIG. 15—AIR STARTING EQUIPMENT FOR LARGE GAS ENGINES (DENTZ).

suitable for insuring a certain explosion of the gases. In the Nurnberg device this fault is avoided by arranging the movable electrode to move quite independently of the armature of the electro-magnet. In this way it is possible to allow the armature to attain a certain speed before striking the movable electrode, and thereby breaking the spark-contact. See Fig. 14.

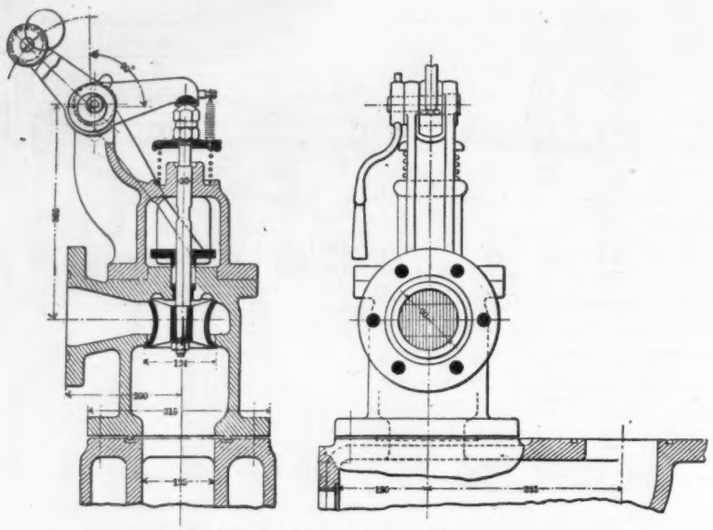


FIG. 16—BALANCED AIR STARTING VALVE (NURNBERG).

Starting.

See Figs. 15 and 16. To get a large modern steam engine, working with high pressure and superheat, warmed up ready to start takes several hours. In addition there is a considerable time required between starting and carrying full load. With large gas engines the whole process lasts only a few minutes. In some cases the time required to bring the engine, provided that suitable gas is available, from a standstill, cold, to full speed was only 25 seconds, with the igniting mechanism automatically retarded. Large gas engines are provided with an auxiliary motor and reduction gear acting on the fly wheel, for the purpose of setting the moving parts in such position as to allow the inspection of the cylnder interior for cleaning and repairs, and also to get ready for starting. The majority of engines are equipped with a complete outfit for starting by compressed air, comprising an independent motor-driven compressor, tanks and air starting valve. See Figs. 15, 16. Air is admitted to the valve chamber at pressures from 160 to 250 pounds per the square inch, the pressure depending on the size of the engine cylinder and kind of service rendered. After one or more strokes effected by compressed air the regular combustion process begins in the combustion space of one cylinder; the supply of air is cut off and the cams, which during the starting period engage the exhaust valves in a double throw instead of a single throw movement—are returned to their normal position. All starting levers and valves must be so located that one attendant can readily actuate them without leaving his place. It is desirable to provide for an arrangement which will retard ignition automatically for the first few strokes. The main fuel or gas valve must, of course, be set so as to produce the most favorable mixture for starting conditions. After the engine is in motion the valve must be readjusted to running conditions. Another method is to start electrically, provided there is a source of electric energy available, which is mostly the case in large central stations. There are two ways of starting: the one is to employ an auxiliary motor engaging the fly wheel through a reduction gear and automatic clutch. See Fig. 17. Precaution must be taken for throwing the motor pinion out of mesh as soon as the fly wheel has attained its normal speed. The difficulty is to get the speed which is necessary for obtaining ignition. The device shown in the drawing is built by the Felten-Guilleaume-Lahmeyer Works in Germany. It is equipped with distant control in order to enable operation from a cen-

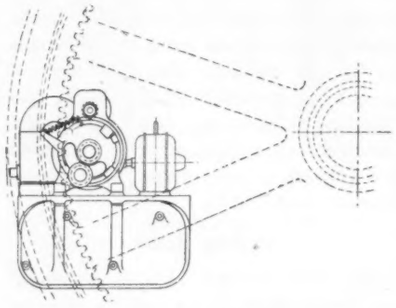


FIG. 17—ELECTRIC STARTING OUTFIT FOR GAS ENGINES UP TO LARGEST SIZE.

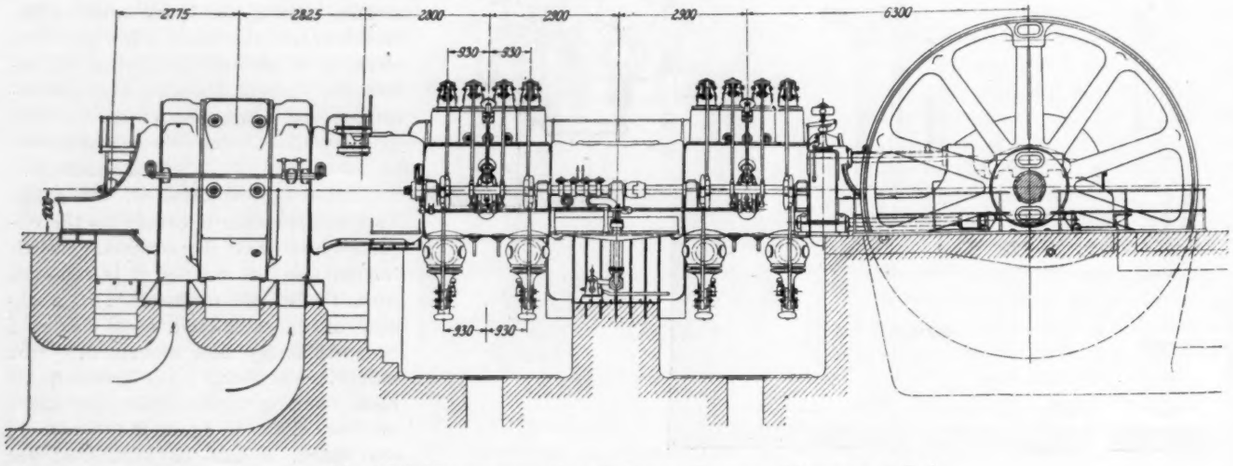


FIG. 18—1,800-HORSEPOWER GAS BLOWING ENGINE (THYSSEN &CO.).

tral place, and is actuated by means of a mechanical or electrical relay.

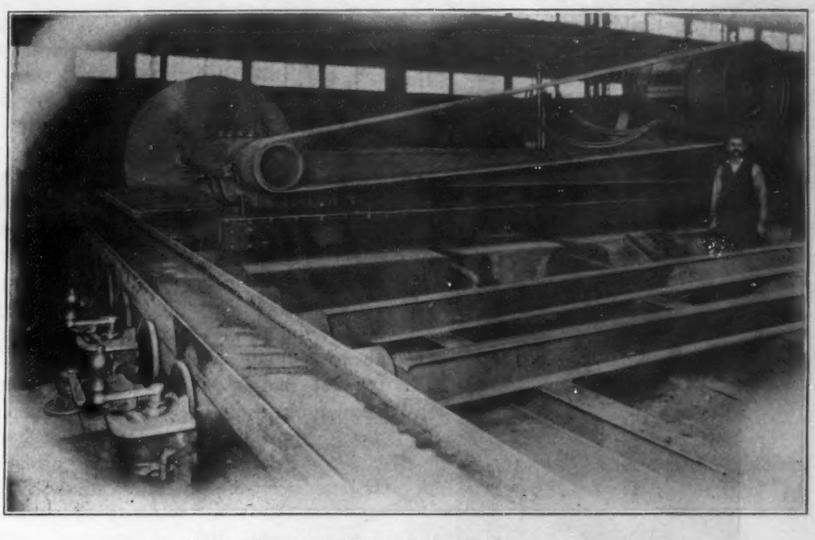
The other method of starting electrically in central stations where a battery is available and the engine is directly coupled to the generator, consists in starting the motor of the booster set directly from the battery. The dynamo is excited from the same source. The generating part of the booster is connected with the dynamo through a double pole switch. The booster is started and the switch is closed. Now the booster begins to deliver current and the dynamo runs as motor, its speed being regulated by varying the amount of excitation. This mode of operation has been introduced with success in smaller plants, and it was found that the consumption of electric current was only one-third of what was used when driving the dynamo though a starting resistance from the battery, as a motor.

Conclusion.

This article gives a brief summary of the principal elements of modern large gas engines as developed and employed in the iron and coal industries of Germany. It is a matter of gratification to all interested in this class of machinery, buyers as well as sellers, to see that after a few years of costly experimentation large gas engines have now attained a state of efficiency, reliability and of profitable standardization, which will undoubtedly prevail for many years to come. To American iron masters and engineers it will be of special interest to compare the engines described above with those built by the various manufacturers in this country, and to note how closely the foremost of them have followed German practice.

RYERSON FRICTION SAW.

In order to meet a demand for high speed cutting of a large tonnage of heavy steel shapes at its Chicago warehouses, Jos. T. Ryerson & Son conducted a series of experiments through its machinery engineering department which lasted about five years and resulted in the high speed friction saw shown in the accompanying illustrations. Three of these saws are now in use at the Sixteenth street plant of this company in Chicago. The Carnegie Steel Co. also has installed one of these saws at its new warehouses at Waverly, N. J. The necessity for this tool presented itself because of the inadequacy of the old time slow speed saws and beam shears. The problem required the designing of a saw that would cut cold, the heaviest sections rolled, at a speed and with an efficiency that would meet the requirements of a largely increased capacity. The type was worked out along the same general design and construction as is embodied in the hot metal saws used in steel mills. Actual results show that 24-inch 100-pound beams can be cut consistently, in from 12 to 15 seconds and smaller sections in a proportionately less time. The saws have been operating at the Ryerson warehouse practically continuously for nine hours each day for the past three years and the maintenance cost has been almost negligible.



LARGE RYERSON HIGH SPEED FRICTION SAW.

The difficulty experienced with other high speed saws now in use has been due, in a large measure, to the lifting of the carriage when the saw blade strikes the work. When this difficulty was overcome in experimenting with the Ryerson saw by placing the material to be cut up near the center line of the saw, it was found that the face of the saw came in contact at the start with such a large section of metal that a considerable shock to the motor resulted, making it necessary to use a larger motor than would have to be used if the saw were allowed to enter the work at a gradual angle. This difficulty was met by using a saw carriage which is held in position by forged steel brackets that clamp on the upper members of the base. This arrangement obviates the necessity for using heavy weights on the top of the saw frame, and permits placing the saw very high in reference to the work and allows the blade to enter the section at a gradual angle and with but little shock.

The base of the saw is of heavy

RYERSON FRICTION SAW CUTTING 24-INCH BEAM.

structural material consisting of four channels with riveted tie-plates. On the top of this base, the saw carriage slides back and forth in "V" shaped automatically oiled grooves. The motor and main bearings are mounted on the carriage. This carriage arrangement offers some very

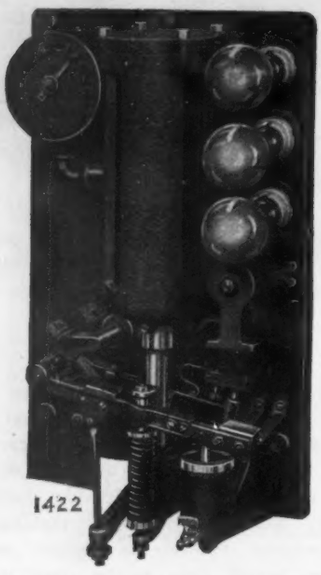


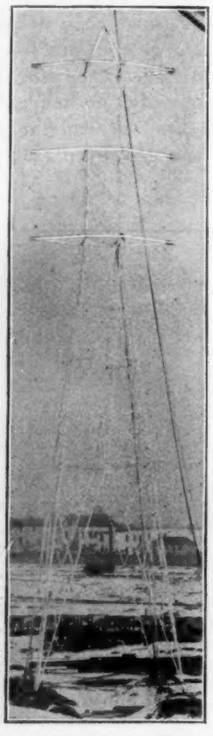
FIG. 1—FRONT OF ALLEN-BRADLEY CONTROLLER.

considerable advantages. The main bearing carrying the saw blade runs entirely in oil. The blade consists of a balanced flange steel circle, 52 inches diameter and ⅜ inch thick, held in place by heavy collars, which fit over the shaft and clamp the blade on either side. The forward and backward motion of the saw carriage is controlled by an 8-inch hydraulic cylinder which is mounted in the base of the saw. The saw measures over all approximately 22 feet long and 5 feet 6 inches wide, and the weight is approximately 40,000 pounds. Each saw is operated by a 100-horsepower motor through a three-ply, 16-inch belt, the ratio of pulleys being such as to give a peripheral speed to the saw of approximately 27,000 feet per minute. Running light the machine consumes about 15 horsepower and it is only when cutting the heaviest sections that the full rated power of the motor is required. A sheet steel hinged hood fits over the upper and back portions of the blade and carries on either side a perforated water pipe, on which a controlling valve is located, so that streams of water pour on to the blade when the cutting is begun. This hood is hinged so that it can be thrown back when the blades are being changed or renicked. A roller table system for carrying the material to and from the saw is of course designed to meet the purchaser's particular requirements.

ALLEN-BRADLEY ELECTRIC CONTROLLER.

Under the name, the Allen-Bradley controller, the American Electric Fuse Co., Muskegon, Mich., is building a controller especially adapted for crane service. The claim of superiority for this controller is based very largely upon the nature of its resistance medium and the advantages attendant thereupon. The familiar phenomenon of high electrical resistance due to the imperfect contact of carbon elements in a circuit is utilized and the resistance members of the controller consist of columns of carbon discs, usually 100 in number, each disc measuring about 1 inch in diameter and ⅛ inch in thickness. The front and rear views of a 30-horsepower controller are shown indicating the placement and number of these carbon columns.

These carbon discs are piled one upon the other in an iron tube from which they are insulated and an electrical connection made at top and bottom. As the discs stand naturally in the tube under no other pressure than their own weight they offer a maximum of resistance, which in the size used in these controllers is 110 ohms. When the greatest pressure is brought to bear on them the resistance is cut down to 1 ohm. The discs have flat polished faces to provide intimate contact under pressure and also to avoid the possibility of carbon dust. Each disc is subjected to a strength test before being used to insure against



STEEL POLE FOR ELECTRIC POWER TRANSMISSION LINE.

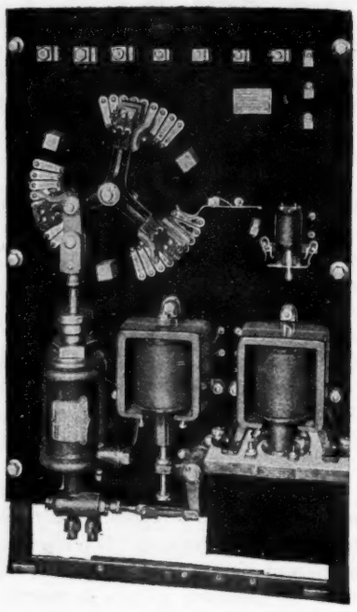


FIG. 2—BACK OF ALLEN-BRADLEY CONTROLLER.

cracking under pressure. The discs are tightly packed in the insulated tubes so that air is practically excluded and the combustion of the carbon is claimed to be nil. The heat which the resistance generates in the discs while never as great as that in which the carbon is produced is taken care of by means of external radiation rings on the iron tubes so that a large cooling surface is provided.

The compression of the discs is controlled by the movement of the operating lever and is in proportion to that movement. As shown in the front view of the controller, the lever is in a neutral position when centered. Movement to the right starts the motor and movement to the left reverses. The adjustment of the pressure to the position of the lever is such that the pressure changes from zero to maximum as the lever moves from the center to the end of the contact plates. An equalizing device is arranged to distribute the pressure evenly to each carbon column—and the contact plates being single units rather than a series of separate contacts permit of an absolutely continuous increase of current through the motor and a consequent delicacy of control impossible where resistance is cut out by jumps.

The continuous character of the

contact plates, it is also claimed, avoids sparking and the consequent wear of brushes and contacts. With this arrangement the only possible points at which a spark could be induced are at the entering and leaving contacts of the lever. At the former point the current is a minimum and at the latter point there remains in the controller circuit only 1 ohm of resistance, so that the change of current is very small. The contact plates are formed of heavy bus bar copper.

MILLIKEN PATENT GALVANIZED STEEL POLES FOR ELECTRIC POWER TRANSMISSION LINES.

The Great Western Power Co., of California, has adopted the Milliken structural steel pole for use in carrying its high voltage power transmission line. It is intended eventually to carry these lines a distance of about 1,000 miles. The power is transmitted on two circuits of three wires each, carrying a current of 100,000 volts. In view of this high voltage, and the consequent danger to life and risk from fire involved, great care was exercised in selecting the particular class of poles to be adopted.

The pole is designed with three cross arms, it being intended to carry a feed wire on the outer end of each cross arm by suspended insulation. The top of the pole is arranged to take a guard wire. The poles are intended to be used about 750 feet apart.

A view of the pole is shown in the accompanying illustration. The bottom of lowest cross arm is 51 feet 2 inches above the ground level, and the second cross arm is 10 feet above the first; the third cross arm is 10 feet above the second. The extreme top of the pole carrying a guard wire is 5 feet 1 inch above the bottom of the highest cross arm. The feed wires are 17 feet 1 inch from each other in a horizontal plane for the two upper cross arms, and 18 feet 1 inch for the lowest cross arm; thus making all feed wires 6 feet 5 inches from the nearest part of the pole proper measured in a horizontal direction.

The bottom of the pole at the ground level occupies a base 17 feet square. The portions in the ground are separate pieces of steel and are of such length as to allow 6 feet for bedding in the ground.

These poles are constructed entirely of structural steel shapes and are designed to follow the theoretical stresses and produce a pole of given strength and stiffness, with a minimum of material. There are many duplicate parts, thus facilitating assembling in the field.

Very complete and careful tests of the strength of these poles were made before their regular manufacture was started. The pole was erected in a vertical position on an immovable concrete foundation. The strains were applied by means of weights hanging from a fixed structure, and the amount of load and deflection was easily determined. The pole was designed to fill the following conditions:

When tested in a vertical position, on an immovable foundation, and with a proper margin of safety a simultaneous horizontal side pull of 1,000 pounds at the top and 2,500 pounds at each of the three cross arms, or with a total strain of 8,500 pounds, the cross arms were to support a suspended weight of 1,000 pounds at their extreme end, and any one of the cross arms should be able to carry at one of these ends a horizontal pull along the line of 3,000 pounds.

The receivers of Milliken Bros., Inc., 11 Broadway, New York City, are manufacturing these poles at Milliken, Staten Island, N. Y., where complete arrangements have been made in the bridge and structural shops for getting out this particular class of structural work.

As all of the material (except bolts and nuts) is galvanized by the hot process before shipment, and after all the shop work has been done, there has been added to the Milliken plant a large galvanizing department for doing this particular work. In fact, it is unique in that it has the largest hot galvanizing bath ever constructed. This bath is capable of taking pieces somewhat over 30 feet in length at a single dipping, which is a decided improvement over the old-fashioned method of dipping long pieces one end at a time. The facilities are very complete in this plant for turning out large quantities of this class of work quickly.

FIG. 1—THE CALUMET CUPOLA.

THE CALUMET CUPOLA.

The conspicuous feature of the new cupola that is being built by the Calumet Engineering Works, Harvey, Ill., is the location of the air chamber inside of the furnace shell. This construction increases the thickness of the

lining at the melting point just above the tuyeres, thus preventing the burning of the shell due to the destruction of the lining at this point. By placing the shell on the outside it is also easily inspected at the bottom. The inside plate of the air chamber is removable and may be replaced when burned out. As shown in Fig. 1, the conical shape of the furnace results in an enlarged base. A cross section of the cupola is shown in Fig. 2. The two blast inlets are located at either side to insure an equal distribution of air in the cupola. They may be attached to suit the location of the furnace. The tuyeres are of the rectangular expanded type, properly proportioned to the blower outlet of any standard machine, and provide a nearly continuous blast opening inside the furnace. The upper tuyeres provide an additional air supply to complete combustion, and are provided with dampers for closing them if desired. A safety tuyere is provided near the slag spout which prevents the molten iron from rising and flowing through the lower tuyeres. The shell and stack are of steel plate construction riveted in sections. Angle lining supports are riveted to the shell at intervals, and standard fire brick can be used for the lining.

The cupola rests on a heavy cast iron flanged base ring to which the furnace shell is bolted on the outside, and the removable air chamber is built on the inside. The cast ring rests upon ribbed columns which stand upon cast base plates held together with steel rods.

The columns are curved to allow the bottom doors to swing back free of the door. Clean out doors are provided in the air chamber, and are machined to insure a perfect fit. The spouts enter the furnace through cast iron frames in the air chamber bolted to the shell. The slag spout is adjustable to conform to the height of the tuyeres. The furnaces are built in 11 sizes, ranging from 24 to 84 inches in diameter inside of the lining.

ORE IN ADIRONDACKS.

New York Authorities Call Attention to Magnetite Deposits.

Important mining developments covering the iron resources of the Adirondack mountains in New York state have been forecasted in a report by the state geological survey. D. H. Newland, who has been in charge of the preparation of the report, declares that the Adirondack iron mines have already yielded nearly 40,000,000 tons of high grade ores, with a market value exceeding $100,000, while many times that amount still remains in the ground. Several new enterprises have recently started in the ore field, and an appreciable increase of productive activity is anticipated in the next few years. Prof. John M.

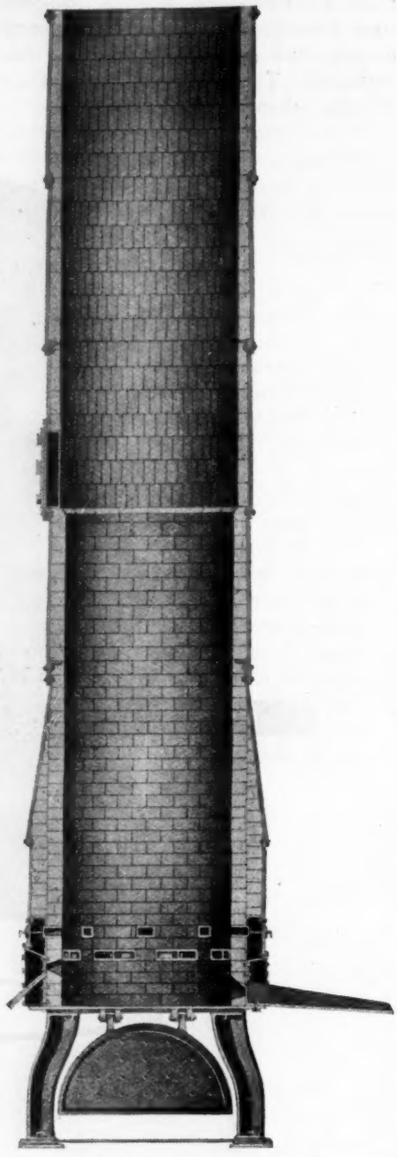


FIG. 2—CROSS SECTION, CALUMET CUPOLA.

Clark, director of science work and state museum, says:

"In the Adirondacks there is no prospect of the completion of ore supplies for a long time to come. While the cost of mining is somewhat higher than in the western and southern districts, the ore in concentrated form as now shipped is of high grade, and more desirable for smelting so that they are greatly sought after by furnaces in New York and Pennsylvania within shipping distances. The deposits at Mineville, with a record of 35,000,000, stands first as regards their richness in metal. They can be expected to yield as great a quantity in the future. At Lyon Mountain, a deposit several miles in length produces a fine quality of low phosphorus magnetite that competes with the best of foreign ores. It is so large in places that it can be worked by quarry methods, which is the case as well with some of the St. Lawrence county mines. The deposits at Lake Sanford, near Mount Marcy, find few or no parallels in respect to magnitude in the east. Capitalists who recently acquired them are preparing to build a railroad in the locality and enter upon extensive mining operations."

Magnetite ore is to be found also in Herkimer and Hamilton counties, N. Y., also in Putnam and other counties bordering on Connecticut. Besides, there are large quantities of hematite ore to be found in Jefferson, Wayne and Oneida counties, and it is believed, in other counties bordering on Lake Ontario. The present boundary lines of the city of Utica approach, if they do not include some territory containing hematite. Within a short distance of Utica were formerly two blast furnaces, one of which, the Franklin, was put in shape in 1902 by M. A. Hanna & Co., Cleveland, and run for a short while. It was again put in operation in 1905 by another company and run until the decline in iron started in 1907. Years ago, the local blast furnace practice provided for importing and mixing other ores with the local ore, but latterly, the stacks have run entirely on ore mined close to the furnace, and quite a quantity of the output has been used by the Utica Pipe Foundry Co. Some attention has been directed toward the iron ore deposits in New York state by the visit of W. E. Corey, president of the United States Steel Corporation, a few weeks ago to a mine in St. Lawrence county called the "Benson mine." It has been operated quite extensively and is in operation at present, producing magnetite. About 20 years ago the Little River Iron Mountain mine was developed, and an extensive plant erected. For a time it flourished and the product found favor with the steel rail makers at Pittsburg. Because the cost of transporting the concentrates to Pittsburg amounted to $2 a ton, the industry was abandoned.

Magnetites carrying titanium are said to be abundant in the region, though they have been neglected owing to the supposed difficulty of their metallurgical treatment. Experiments recently made, however, have demonstrated that it is practicable to use them for mixture with ordinary ores, and they will soon be the object of mining.

CONDITIONS IMPROVE.

Central Pennsylvania Industries Are Showing Greater Activity.

Harrisburg, Pa., April 12.—The iron and steel situation in central Pennsylvania is slightly improved but is nothing to boast of. Most of the mills now running report that they are operating on orders which come in weekly and that little or nothing is being done on stock. The blast furnace situation in the Susquehanna and Lebanon valleys is the dullest in a dozen years. Only two of seven stacks in this county are in blast, although two are being put into shape for early resumption if needed. Lebanon furnaces are doing very little, but are still on the active list. Two are being repaired, including one of the Pennsylvania Steel Co. Several other furnaces in the Lehigh and Schuylkill valleys are in the hands of repair men.

The Pennsylvania Steel Co. has nine open-hearth furnaces, including the five new large ones, at work. Its rail mill is also being run.

Rolling mills at Reading are in operation, while there is also activity manifested at Coatesville and Lebanon. The Harrisburg mills are working in part, the Chesapeake nail works and Harrisburg Pipe & Pipe Bending Co.'s plant being the only ones running on full time.

There is considerable interest in the application made for a charter for the Edgewater Iron Co., by General E. Burd Grubb, Lowden W. Richards and George L. Record. The application is for a general iron business and is made both from Philadelphia and Lebanon.

The Williamsport Nail & Iron Works is among the latest of the Susquehanna valley iron plants to resume.

The Scranton Iron Works has been formed at Scranton by D. B. Atherton, E. D. Williams, Herman Behrens, D. M. Gallen and F. G. Krugerman. Fire escapes and structural work will be handled.

The authorities of South Bethlehem will shortly let a contract for the bridge to cross the Lehigh river. It will be 385 feet long.

The Empire Steel & Iron Co. is laying foundations for one new furnace at Catasauqua. It will replace some of the older furnaces.

The Keystone Agricultural Works has been shipping from Pottstown numerous agricultural implements to Siberia.

Recent increases of stock and debt filed at the state capitol have been: Tauhill Iron Works, Scranton, $50,000 to $300,000, stock; Petroleum Iron Works, Washington, $150,000 to $500,000, stock.

CINCINNATI NEWS NOTES.

The following nominating committee has been named to select candidates for president of the Iron Buyers' Association to succeed William Fetzer, who has tendered his resignation. H. R. Viot, of the Barney & Smith Car Co.; P. E. Montanus, of the Springfield Machine Tool Co., and S. M. Blackburn, of the John B. Morris Foundry Co. The committee will report the names of the candidates to the secretary and a mail ballot will be taken.

Robert Wuest, commissioner of the National Metal Trades Association, will be one of the speakers at the convention of the National Supply & Machinery Dealers Association to be held at Richmond, Va., May 18. His subject will be "Benefits to be Derived from Trade Organization."

The industrial bureau directors are much pleased over the promise of President Kenan, of the Union Gas & Electric Co., that his company will furnish Cincinnati manufacturers with gas at 15 cents per 1,000 feet within a year and a half.

F. M. Huschart, assistant to President F. A. Geier, of the Bickford Drill & Tool Co., has tendered his resignation which has been accepted. Mr. Geier became president of this company after the death of Harry Hoefinghoff and Mr. Huschart went with the Bickford company to assist Mr. Geier.

Receiver Layne, of the Robert Field Co., is ill with appendicitis, and Herbert Black is acting for Mr. Layne temporarily.

To Close Mexican Markets.—The closing of Mexican markets to United States and other foreign manufacturers of steel rails and other steel products will be brought about if the petition now in the hands of Jose y Lymantour, minister of finance, be favorably considered as has been said appears likely. This petition asks for a prohibitory increase in duties on all imported steel. It has been signed by the steel and iron manufacturers of Mexico as well as by promoters of various small manufactories throughout the country.

The Central Stove Manufacturers' Association has decided to hold its June meeting in Columbus, O.

TO VOTE ON BOND ISSUE.

Alabama Consolidated Coal & Iron Co. Plans to Retire Outstanding Bonds.

A special meeting of the stockholders of the Alabama Consolidated Coal & Iron Co. has been called for April 22, to vote on a proposition to authorize an issue of $5,000,000 general consolidated mortgage 6 per cent bonds. Of the issue, $2,200,000 is to be reserved to retire outstanding bonds, and the remaining $2,800,000 is to be retained in the treasury and issued as the directors see fit.

The report of the Alabama Consolidated Coal & Iron Co. for the fiscal year ending Oct. 31 last is being distributed in pamphlet form among the stockholders. The report shows that the net earnings were $657,985, compared with $488,992 for the previous year; interest and depreciation charges, $299,107, compared with $154,144 in 1906; leaving a balance available for preferred stock dividends amounting to $358,878, compared with $334,848 for the year previous. Preferred stock disbursements included $87,500, leaving a balance applicable to common stock dividends of $271,378. The gross sales amounted to $2,585,541, while producing costs were $1,948,505, leaving the gross profits $637,036. Miscellaneous income amounting to $168,364 increased the gross income to $755,401. The balance sheet shows total assets of $8,100,558.

New Ore Dock Completed.—It is officially announced that the Pennsylvania Railroad Co. has completed its West Seneca branch together with its new ore dock at West Seneca. The new line, which was built to obviate the necessity of transferring freight through the crowded city yards of Buffalo, is about seven miles long and runs from a point on the Buffalo division of the Pennsylvania, near Gardensville, to the company's terminals in South Buffalo. The new ore dock, which is near Buffalo harbor, has a capacity of 1,000,000 tons. It is equipped with electric machinery capable of handling 500 tons an hour.

In an action brought by the Lorain Steel Co. against the Union Railway Co., of New York City, operating independent surface roads in the Bronx, to recover $23,233.74 for material furnished and labor performed, Federal Judge Lacombe has appointed Frederick Whitridge receiver for the railway company.

MORE CONTRACTS LET.

Canadian Government Pushes Work on Grand Trunk Pacific Railway.

Toronto, Canada, April 10.—The Canadian government has let contracts for building six more sections of the eastern division of the Grand Trunk Pacific railway, covering in all 366 miles. The successful bidders were as follows: Two sections, covering 105 miles from a point 58 miles west of Moncton, N. B., to the Tobique river, went to the Grand Trunk Pacific Construction Co.; one section of 31 miles, from the Tobique river westward to Grand Falls, N. B., to the Willard-Kitchen Co.; one section west from the New Brunswick and Quebec boundary for 52 miles to M. P. & J. G. Davis, Ottawa; section of 100 miles westward from a point 8 miles west of the Abitibi river, New Ontario, and another section of 75 miles westward from Lake Nipegon, New Ontario, to Fauquier Bros., Ottawa. The whole of the New Brunswick portion of the line is now under contract. The figures have not been given out, but it is understood that contract prices were lower than those in the contracts let last year.

The Canadian Pacific railway has laid off upwards of 800 men employed in their Angus shop at Montreal, nearly all being in the passenger car repair department. General Manager D. McNicoll explains that no particular significance attaches to the matter as it is the practice to have every passenger car on the road overhauled during the winter months and this work is now finished. Construction work is still active, the company latterly having turned out 16 freight cars and two passenger cars per day from its own shops besides taking over steel freight cars at the rate of nine per day from the Dominion Steel Works.

RECENT CUSTOMS RULINGS.

Important Decision on "Steel in Strips" Case, Long Pending—Other Decisions.

The customs board of the United States rendered its decision recently in an important question of steel in strips, varying in width from ½ inch to 12 inches, under 0.025 of an inch thick and in coils over 50 feet long, to the effect that the merchandise was dutiable at 4.7 cents per pound or less according to the value. The subject has been in disagreement during the tariff acts of 1890, 1894 and 1897, and it is estimated that there is, at least, $150,000 involved in protests.

The various judicial decisions in the last 17 years have not been altogether uniform. In the Wetherell case the court of appeals, which passed on the merchandise for the first time, reversed the circuit court and held it dutiable as "flat steel wire or sheet steel in strips," and not as "steel in forms not specially provided for." The Belcher suit which followed some years afterward was decided the same way in the circuit court and the judge said of the material from 500 to 1,500 feet long that it was confessedly sheet steel in strips. The same court affirmed the assessment in the original Boker case, but, on appeal, the ruling was reversed in 124 Fed. Rep., 59. The treasury department determined to start a new case, however, and simply paid the importers the amount in suit in that judgment. In 1905, the board of general appraisers disregarded the last court of appeals decision and affirmed the assessment on two grounds (1) that the imported article was included in the commercial term, "flat wire," and (2) that the testimony of the importer in the court was grossly misleading. On appeal, Judge Hough, district judge of the circuit court, reversed the board's ruling and followed the higher court on the ground that "there never was a sheet from which the strips were made," and consequently the product could not be "sheet steel in strips." The court of appeals sustained the judgment in November, 1907, and the treasury department acquiesced in the decision last February.

The present decision by the lower customs tribunal is the first of a series which will follow shortly for various importers, and affects the case twofold. Not only does the government acquiesce in the Boker suit, but hereafter the steel strips will be classified and dutiable at the specific rates as "in all forms and shapes." The late judicial findings will cost the government thousands of dollars revenue each month.

Steel Tubes.—The court of appeals, second circuit, in regard to the rate of duty applicable on steel tubes, has overruled an appellant to the extent of holding that certain cylindrical vessels about 4 feet long and 8 inches in diameter, used for conveying gas at a high pressure, were dutiable at 35 per cent. In the original case before the board of general appraisers, two years ago, there were many sizes of these tanks in controversy. Duty on all was assessed at 45 per cent. On those that were of the above given size, the board sustained the claim of the importers. But as to the others, 35 x 8 feet, and 19 x 6 feet, Hon. I. F. Fischer for board No. 2 affirmed the collector's decision on the overwhelming testimony that the vessels were not tubes. The appeal just decided was taken by the government. As it was merely a question of fact and not of law, the court of appeals is the tribunal of last resort to determine the suit.

STEEL COMBINATION

Is Proposed, But Agreement with America Not Included.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., March 30.

Rumors are persistent in Great Britain of efforts in the direction of steel combinations. On March 28, the Birmingham *Daily Post*, a high class newspaper usually well informed on such matters, stated that there was held in London an important conference of makers of structural material in the United Kingdom, Germany, and Belgium, to endeavor to arrive at a basis of agreement for regulating the export trade of the several countries. The production of this steel is enormous as it enters, in one form or another, into all departments of structural work, and the competition has been and still is very keen for all contracts that come into the international market, with the result that prices are at times severely cut. The conference is the outcome of a suggestion of the German Verband, whose action has excited much interest in the United Kingdom.

Enquiries by the British correspondent of THE IRON TRADE REVIEW have not been able to verify the matter in every particular, but in steel using circles the information is believed to be substantially correct. It is known that for months past efforts have been made to come to an agreement on selling prices and within the past few days a draft circular of prices agreed to by a recently formed association has been issued to users fixing prices for quantities of 250, 500, 750, and 1,000 tons, but in this case there was no mention of continental agreement, so that, if the above information is correct, the matter has now been carried a step further.

A large Birmingham steel merchant, who was interviewed, pointed out as a most serious omission from the continental program the absence of any mention of agreement with America. He concludes that possibly America may be applied to later, but it is clear, he says, that no large advance could be agreed to without consulting America. The makers in the United States would, if let out in the cold, have a great opportunity to dump quantities of steel into this country, and in view of advantageous freights and the comparative ease with which return cargoes can be secured from Great Britain, American sales in this country would probably total up to considerable amounts.

Industrials Make Small Gains

In a market distinguished by uncertainties the leading industrial securities made gains of various importance, mostly fractional, but still gains. The largest factor in arousing the dominant uncertainty that overhung the market for the first half of the week was the Erie railroad situation, postponement being made until the last moment of any announced plan for financing the $5,500,000 of notes due Wednesday. Finally when holders of the notes had been refused cash payment on demand, E. H. Harriman offered to take the notes and his offer was accepted. Stocks revived somewhat under the impetus of safety to the general market thus granted, but still trading continued dull and uninteresting generally the remainder of the week. Copper stocks declined when the price of the metal fell.

During the middle of the week rumors of price cutting even secretly by the larger interests caused dullness and actual sagging of the steel issues. But at the issuance by Chairman Gary, of the Steel Corporation, on Thursday of an interview in which he denied that there had been price cutting or that there would be unless after reasonable reflection by all interests involved, steel and iron stocks held very well. On the following day, additional strength was lent industrials by reaffirmation of Chairman Gary's declaration by Chairman C. M. Schwab, of the Bethlehem Steel Corporation. Government forecast of the winter wheat announced Wednesday was very satisfactory, being 91.6 per cent, an exceptionally high showing that has been equalled only three times in the past ten years.

The money market continued satisfactory. Call money ranged from 1½ to 2 per cent. An encouraging feature was the drop in time money rates, both for collateral and merchant paper, in some cases ruling under 5 per cent over the year end. The announcement of an intended sale of $20,000,000 out of a $50,000,000 issue of bonds to be authorized by the stockholders of the Delaware & Hudson, was regarded as an expression of confidence in the improvement of the investment situation. There are already announced two other issues, including the Illinois Central and the new bond issue of the Union Pacific.

The statement of the clearing house banks of New York shows that the banks hold $43,265,675 more than the requirements of the 25 per cent reserve rule. There was an increase of $2,575,375 in the proportionate cash reserve, as compared with last week. Loans increased $7,033,100; deposits increased $11,566,500; circulation decreased $674,400. The statement of banks and trust companies of Greater New York not members of the clearing house shows that they have aggregate deposits of $805,770,300; total cash in bank $57,108,300, and loans amounting to $812,523,200. The number of shares dealt in last week on the New York market was 2,397,655, compared with 2,926,400 last week, and 5,126,858 the same week last year. Bond sales, exclusive of government bonds, amounted to $15,921,000, compared with $10,080,000 last week, and $9,249,000 the same week last year.

The New York exchange will be closed both Friday and Saturday this week, Friday being Good Friday.

Copper Market.

Boston. — Butte Coalition closed 20½, a net loss of ⅛; Calumet & Arizona closed 100, unchanged; Calumet & Hecla closed 630, unchanged; North Butte Mining closed 33, a net loss of ¾; Quincy Mining closed 84, a net gain of 2.

New York.—Amalgamated Copper closed 58⅛, a net loss of ⅝.

Financial Notes.

American Rolling Mill Co., Middletown, O., declared the regular quarterly dividend of 1½ per cent on its preferred stock, payable April 15; Harbison-Walker Refractories Co., the regular quarterly dividend of 1½ per cent on the preferred stock, payable April 20. The issue of clearing house certificates passed into history by the report of the loan committee of the New York Clearing House just submitted. The first issue of certificates was made Oct. 26, and the last certificate was redeemed March 28. The largest amount outstanding was $88,420,000, Dec. 16, compared with $28,280,000 in the panic of 1893.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Apr. 11	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	7⅞	+ ⅛	Sept. 3	19,820 000			
Allis-Chalmers pr	20⅛	+1⅛		16 150,000	7 cum	1¾ Q.	Feb., 1904
American Can	4¾	— ⅛	Feb. 3	41.233 300			
Am. Can pr	50¼	+ ¾		41.233,300	7 cum	1¾ Q.	April, 1908
Am. Car & Foundry	83½	+ ⅝	June 25	30.000,(00		1 Q.	April, 1908
Am. Car & Fdy. pr	94⅛	.....		30 000.000	7 n. c.	1¾ Q.	April, 1908
American Loc	45	+1⅛	Oct. 20	25,(00.000	5	1¼ Q.	May, 1908
American Loc. pr	91¾	+1⅛		25 (00.000	7 cum	1¾ Q.	April, 1908
American Ship	40½	.....	Oct. 14	7 60 ,000	4	1¼	April, 1908
American Ship pr	95	.....		7,900,(00	7 n. c.	1¾ Q.	April, 1908
Am. Steel Foundries	5⅜	+ ⅛	Oct. 6	15 810 000			
Am. Steel Foundries pr	30⅜	+ ⅜		17,240.000	6 cum	2½	Aug., 1904
Barney & Smith	50	.....	June 2	2 000.000	4	1 Q.	Sept., 1907
Barney & Smith pr	90	.....		2.500 000	8 cum	2 Q.	Mar., 1908
Bethlehem Steel	13¾	+ ¼	April 7	14.862,000			
Bethlehem Steel pr	38	+2½		14 9(8 000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	29¼	+1½	March 17	45,000.000*	6	1½ S. A.	Feb., 1908
Cambria Iron	45	—1¼		8,468.0(0*	4	2 S. A.	April, 1908
Chicago Pneumatic Tool	23	—1⅞	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	23¾	+ ¼	Oct. 19	34 235 500		3¼	April, 1902
Crucible Steel	5	— ⅛	Oct. 21	24.578 400			
Crucible Steel pr	36¼	— ¾		24,436.500	7 cum	1 Q.	Dec., 1907
Empire Steel	8	+3	Feb. 26	1,254,770			
Empire Steel pr	40	—7		2 500,000	6 cum	3 S. A.	Jan , 1907
Fay & Egan	100	.....	Feb. 18	1,000,000	6	1½ Q.	July, 1907
Fay & Egan pr	110	.....		1,(0(000	7 cum	1¾ Q.	Aug., 1907
General Electric	133	+8	May 12	65,167.400	8	2 Q.	April, 1908
Harbison-Walker	10¼	+ ¼	Jan. 20	18.000 000		½	Oct., 1907
Harbison-Walker pr	67	—1		9.6 0,000	6 cum	1½ Q	April, 1908
International Pump	23⅞	+1⅛	June 2	17.787 300		1	April, 1905
International Pump pr	71	.....		13,835,000	6 cum	1¾ Q.	Feb , 1908
Lackawanna Steel	34	+6	March 11	34,971 400			
Lake Sup. Corp	8½	+1⅛	Oct. 7	40.(00 000			
New York Air Brake	69	+3	June 18	8 013,5(0	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8.(00 000	6	1¾ Q.	Mar., 1908
Niles-Bement-Pond pr	100	.....		2 000,000	6 cum	1¾ Q.	Feb., 1908
Otis Elevator Co.	32	+2	March 16	6 156,600		1½ S. A.	April, 1908
Otis Elevator Co. pr	82	+2		5 449.500	6 n. c.	1½ Q.	April, 1908
Penn. Steel	50	—1	May 11	10,7(0 000			
Penn. Steel pr	90	—3½		16.5 0 400	7 n. c.	3½ S. A.	Nov., 1907
Pittsburg Coal Co	10	+ ⅝	Feb. 10	28,853 400			Nov., 1906
Pittsburg Coal Co. pr	40½	.....		27,030.800	7 c.	1¾	April, 1903
Pressed Steel Car	24½	+1⅛	Feb. 19	12,500, 00		3	Aug., 1904
Pressed Steel Car pr	79	+2¼		12.5(0 000	7 n. c.	1¾ Q.	Feb., 1908
Pullman	154	+3	Nov. 11	100 000 000	8	2 Q.	Feb., 1908
Railway Stl. Spring	33	+ ¾	March 5	13,500.000	4	2 S. A.	April, 1908
Railway Stl. Spring pr	75	.....		13,500 000	7 cum	1¾ Q.	Mar., 1908
Rep. Iron & Steel	18¼	+ ¾	Oct. 21	27.191.000			
Rep. Iron & Steel pr	68¼	— ⅝		20,416 900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	44½	.....	March 11	10.000,000	5	1¼ Q.	Mar., 1908
Sloss-Sheffield pr	93	.....		6,700 0 0	7 n. c.	1¾ Q.	April, 1908
U. S. Pipe & Fdy.	25	+1	June 24	12,500,000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	69¼	+1¼		12 500,(00	7 n. c	1¾ Q.	Mar., 1908
U. S. Steel	33⅜	+ ⅝	April 20	503,304,5(0	2 n. c.	½ Q.	Mar., 1908
U. S. Steel pr	98⅛	+ ⅛		360,281,100	7 cum	1¾ Q.	Feb., 1908
U. S. Steel 5's	95⅛	+ ⅛		463,798 000	5	5 A.	.....
Va. Iron, Coal & Coke	50½	.....	Nov. 17	9.073 680			
WestinghouseElec	55¼	+ ¾	June 24	23 933 200*	10	2½ Q.	Oct , 1907
WestinghouseAir Brake	97	+8¼	Oct. 6	11.(00,000*		2½ Q.	April, 1908

Par value of shares, $100, except those starred (*), $50

NEWS FROM MANY INDUSTRIES

New Buyers:—

The Platt Iron & Steel Co., headed by Walter Platt, of Cumberland, Md., has been incorporated at Baltimore, to buy, sell, and deal generally in iron and steel. The capital stock is $10,000.

The Harvey Iron & Metal Co., 409 Reaper block, Chicago, metal dealer, has been incorporated by Simon Sleph, Max Weinstein and William Weinstein. The capital stock is $50,000.

The Eck Tool Co., 269 South Canal street, Chicago, has these incorporators: William Crokett, Reginald Eck and Albert P. Crockett. The company will manufacture tools and machinery and is capitalized at $10,000.

The Central City Iron & Metal Co., Syracuse, N. Y., has filed articles of incorporation to do a manufacturing and distributing business. The capitalization is $20,000, and the directors are: Harris C. Cohen, John J. Keefe and Henry Blumberg.

The Interchangeable Grate Bar Co., capital $200,000, has been incorporated at Camden, N. J., to manufacture and deal in grate bars. The incorporators are: Charles W. Rolin, George Barry, Henry A. Barry and William MacDonald, of Camden, N. J.

Batcheller, Clark & Batcheller, Inc., New York City, machinery, has been chartered with a capital of $20,000. The directors are: Clements Batcheller and H. G. Batcheller, 90 West street, and Horace D. Byrnes, 141 Broadway, New York City.

The Delaney-Roberts Co., New York City, engineering and construction, with capital stock of $5,000, has been chartered by Harold B. Roberts, Pelham, N. Y.; Leonard B. De Vake, No. 45 Broadway; John M. Delaney, Terminal building, both of New York City.

Cawley-Boettiger Engineering Co., Brooklyn, N. Y., engineering and construction, has been organized with a capital of $15,000. The incorporators are Philip Boettiger, 74 Grove street; Franklin C. Haven, 167 Fifty-seventh street, all of Brooklyn; Oscar Storck, 887 East 169th street, the Bronx.

Edward D. Cronin, 277 Vanderbilt avenue, Brooklyn, N. Y.; Fred Knowlton, 638 East 139th street, New York City, and G. Whyard, Jersey City, N. J., have incorporated the American Flexible Shaft Co., Hasbrouck Heights, N. J., general implements, machinery, devices, etc. The capital stock is $125,000.

The Manganese Steel Rail Co., Mahwah, N. J., to manufacture iron, steel, manganese, etc., has been incorporated with a capital of $400,000, by the following: Winfield S. Potter, Mahwah, N. J.; Bayard L. Peck, 26 Liberty street; William S. McGowan, 39 West Twenty-seventh street; Albert W. Austin, 38 Park Row, all of New York City; Frederick W. Snow and Robert J. Davidson, Hillburn, N. Y.

The Terre Haute Furnace & Sheet Metal Co., Terre Haute, Ind., with a capital of $10,000, has been incorporated to buy and sell furnaces, heating plants, etc., by Samuel C. Brown, Thomas F. O'Hearn, Thomas G. Love and Mary C. Brown.

Articles of incorporation are filed by the American Recording Lock Co., of Elkhart, Ind. The capital stock of the new company is fixed at $150,000, and the following directors are mentioned in the charter: Willard W. Sterling, J. Milton Trainor, Wallace G. Clark, Walter J. Miller, LeGrand C. Bash and James G. Trainor.

New Construction:—

The Cincinnati Galvanizing Co. is having plans prepared for a one-story addition to the present plant, 40 x 78 feet.

Murray & Co., Dallas, Texas, will shortly start the erection at Atlanta, Ga., of a factory for the manufacture of a full line of machinery for the ginning trade.

The Sheffield Stove & Foundry Co.'s plant at Chattanooga, Tenn., is nearing completion, and President Cohen announces that it will be in operation in 30 days, with 100 molders employed.

Plans for the first of the buildings to be erected by the Smith Mfg. Co., Bessemer, Ala., are being figured over by bidders. It will cost about $5,000, and is to be built at once.

The Indiana Stove Works, Evansville, Ind., has let contracts for a three-story warehouse, 130 x 105 feet. It will be built entirely of brick, and will be used for pattern storage.

The Advance Radiator Co., Syracuse, Ind., is transferring the equipment of the Warsaw, Ind., plant to that city. The company expects the Syracuse plant to be placed in operation shortly.

The contract for the structural iron work on the $40,000 warehouse for the United States Glue Co., Carrollville, Wis., has been awarded to A. F. Wagner, 516 Market street, Milwaukee.

The Universal Machine Screw Co., Hartford, Conn., is negotiating for a site for a new foundry on the Windsor street extension, having a frontage of 352 feet. Plans for the proposed foundry are being drawn.

Benjamin Smith has commenced the erection of a machine shop at Shenandoah, Ia., on a site recently purchased. He announces that he will abandon the foundry business and devote his time wholly to the machine shop.

The Cincinnati Artistic Iron Works, Cincinnati, has secured factory buildings at 2941-2943 Eastern avenue. The buildings are three-story brick, on a 60 x 100 lot. As soon as improvements have been made the structures will be occupied.

The Susquehanna Smelting Co., Philadelphia, is making contracts for the improvement of old Holly molding shops at Lockport, N. Y., and has closed a contract for 1,000 electrical horsepower to be delivered to the new plant.

The G. M. Yost Mfg. Co., manufacturer of high grade vises, has just built and equipped a new foundry at Meadville, Pa. The main office, formerly located at Mechanicsburg, Pa., has been removed to Meadville.

The American Case & Register Co., Alliance, O., has secured plans for a manufacturing plant at Salem, O. The factory building will be of concrete building blocks, one story in height, 200 x 500 feet, and the office building will be a three-story structure 100 feet square.

The Balderson Iron Co., Beloit, Wis., is to erect a new brick and stone foundry building. Considerable structural iron will be used in the building. Bids will be received by Architect Irving F. Hand, Goodwin Block, Beloit, from April 20 to April 30.

Excavation has been started for the extension to the plant of the Pacific Iron Works, Portland, Ore. Upon the foundations will be built a blacksmith shop 50 x 100 feet. Another building will be erected for the manufacture of steel beams, the improvements costing about $10,000.

The Detroit Steel Products Co. has let a contract to the Russel Wheel & Foundry Co. for the erection of a brick and concrete building, 65 x 350 feet. At the new factory which will be completed within 60 days, automobile springs will be manufactured. In addition to the building already completed and one for

which the contract has been let, the company plans to build a power house and also an administrative building.

The Union Steel Casting Co., Sixty-first and Butler streets, Pittsburg, has begun the erection of an extension 45 x 180 feet, to its finishing shop, and in addition to this it has about completed a new pattern and storage building, doubling the capacity of this department. Extensive changes are being made in the power plant, including the installation of a compressor to supply power for air tools throughout the plant; and two 140 horsepower gas engines will be included in the new installation. A special planer for machining the heads off locomotive frames, will soon be placed in position. A 10-ton electric crane will serve the new finishing shop. The cost of the new improvements will be between $50,000 and $60,000.

General Industrial:—

The Pend d'Oreille Iron Works, Sand Point, Wash., has increased its capital stock from $25,000 to $50,000.

The Olympic Foundry & Machine Works, Tacoma, Wash., formerly the Olympic Foundry, ran the first casting in its new plant March 25.

The Auten Machinery Co., Chicago, Ill., was recently incorporated to do business as manufacturers' agent in a jobbing supply business.

At a meeting of the creditors of the Francis Fritsch Mfg. Co., bankrupt millwright and founder, Cincinnati, held April 6, W. U. Farrell was selected trustee.

The Anderson Foundry & Machine Works, Anderson, Ind., has filed a notice of the issuance of preferred stock in the sum of $50,000, through Secretary W. N. Durbin.

Articles of incorporation have been filed at Madison, Wis., by the McKenzie Furnace Co., Chicago, with a capital of $200,000, of which $28,751 is represented in business and property in Wisconsin. Henry Lucas, of Milwaukee, is the Wisconsin representative.

The O'Keefe & Orbison Engineering Co., Appleton, Wis., has filed charter amendment making indefinite the existence of the incorporation.

The former Vollrath Mfg. Co., Sheboygan, Wis., was recently incorporated as the Porcelain Enameling Association of America with a capital stock of $150,000. The incorporators are A. J. Vollrath, Carl J. Vollrath and Walter J. Vollrath.

The stockholders' meeting of the Graham Phillips Horse Shoe Iron Co., Cincinnati, has been called for April 21, for the purpose of dissolving the corporation and surrendering its charter.

The capital stock of the Whitcomb Machine Co., Norristown, Pa., has been increased to $200,000. The company announces that it will expend $50,000 in erecting and equipping a new factory building.

The Steinle Turret Machine Co., Madison, Wis., has filed an amendment to its charter increasing its capital stock from $60,000 to $100,000, and the number of its directors from three to five.

The Meehan Boiler & Construction Co., Lowellville, O., is steadily making repairs and improvements at the Mary stack of the Ohio Iron & Steel Co, at Lowellville, which was blown out several weeks ago.

The Yale & Towne Mfg. Co. advises that the West Virginia incorporation recently noted was that of a subsidiary company, which has been incorporated mainly for commercial reasons of its own.

The Monroe Machine Co., Monroe, Mich., has developed a new line of gasoline engines, the invention of one of the members of the firm. The company has received from Denver, Colo., an order for $40,000 worth of the new engines.

The Peck, Anderson & Peck Co., Cincinnati, whose incorporation was recently noted, has been formed for the purpose of conducting a general heating business, and has secured as quarters a building at the corner of Court and Broadway.

The Van Mfg. Co., Argos, Ind., recently incorporated, has patented and is building special machinery for the production of built-up wire bound veranda columns. The company expects to locate factories at various points throughout the country.

The LaBelle Iron Works Co.'s No. 4 oil well in the Follansbee pool, Brooke county, W. Va, was drilled into the pay sand March 31, and during the first 10 hours produced 410 barrels. This was by far the largest well that has been found in that development.

The Joliet Bridge & Iron Co., which secured the contract for the structural steel to be used in an auditorium at Saginaw, Mich., is shipping machinery to Grand Rapids in preparation for the receipt of the steel material now being turned out of the company's plant at Joliet, Ill.

J. C. Christenson has begun the removal of his foundry and machine shops from Nacogdoches to Wichita Falls, Tex., after entering into a contract with the Wichita Falls chamber of commerce. He is to have his machine shop ready for operation within three months and a foundry installed within six months.

The Llewellyn Iron Works, Los Angeles, Cal., by its president, Reese Llewellyn, is seeking the vacation of about 250 feet of public street adjoining its plant. The iron works is the owner of all the property in the immediate locality, and the claim is made that no one would be damaged by the vacation.

The city council of Columbus, O., is planning a new annexation ordinance to include the Carnegie Steel plant, the Buckeye Malleable Iron Co., and the Panhandle shops, together with other outlying territory. Public hearings will be held later by the committee on plats and engineering.

The Killing Molding Machine Co., Davenport, Ia., has transferred its stock, patents and book accounts to E. Killing, for $40,000. He recently purchased the Simplex Washing Machine Co. plant in West Davenport, Ia., will remove the molding machine plant to that location and will rename it E. Killing's Molding Machine Works.

Vincent J. King, Lorain, O., stationary engineer, has been granted a patent on an automatic engine stop, operated by electricity. It is designed to stop an engine in time of accident, and the inventor claims that it will prevent fly-wheel disintegration common with runaway stationary engines. Mr. King will be associated with A. D. King in the manufacture of the device.

J. Leon Replogle, third assistant to General Manager Charles S. Price, of the Cambria Steel Co., and George Griffiths, secretary of the Morrellville Coal & Coke Co., have purchased from the Harbison-Walker Refractories Co., an old basic brick site in Johnstown. The purchasers are holding the site as a speculation, and have already received offers from three manufacturers desirous of locating there.

C. A. Finnegan, formerly president of the Finnegan Smelting Co., Louisville, Ky., and now with the Vulcan Smelting Co., of North Chicago, Ill., has transferred to the Vulcan Louisville Smelting Co., 179 feet of frontage on the site in Louisville, for $1 and other valuable considerations. Two years ago the Finnegan Foundry Co., Louisville, was destroyed by fire, and Mr. Finnegan removed to North Chicago, where, with others, he established the Vulcan Smelting Co.

A party of Pennsylvania and New Jersey steel company officials has been making an inspection of the mills of the Susquehanna Iron & Steel Co. in the locality of York, Pa. Among those in the party were President Brock, of the Susquehanna Iron & Steel Co.; President Thomas, of the Lewiston Steel Co.; Manager Burnham, of the Manhattan Steel Co.; President Samuel Light, of the Lebanon Iron & Steel Works; General Superintendent Jacobs and Purchasing Agent Van de Werter, of the Susquehanna company.

The Sears Mfg. Works, Plano, Ill., manufacturer of metal bed, agricultural implements, etc., was recently incorporated to take over the manufacturing business conducted for the last dozen years by Albert H. Sears. It is the company's plan to associate other capital and increase the business. The company for many years has occupied the plant used by the Deering Harvester Works in Plano.

Referee in Bankruptcy H. G. Newton is undertaking to settle up the affairs of the International Wire Corporation, Fairhaven, Conn. The distribution of $615,000, for which the plant was sold by the receivers, F. B. Farnsworth and H. Stuart Hotchkiss, is one matter up for consideration, there being a question as to how much of this amount the bondholders should receive, and how much the general creditors. The claim of the bondholders amounts to $500,000, with interest. The claim of the National Steel & Wire Co., the parent corporation, for $2,500,000, will likely arise through a separate suit.

The International Steam Pump Co., Cincinnati, has secured a favorable decision in the state supreme court involving the dedication of a strip of land 25 feet wide and 800 feet long for a street extension, which the Pump company refused to turn over.

The Broomel Schmidt & Steacy Co., York, Pa., has just shipped three steel gates to be used in the Shoshone river dam in the state of Wyoming. The gates will weigh about 125 tons, when erected, four gondola cars being required for the shipment. The dam of which they form a part will be the highest in the world. The sluices will control a body of water 310 feet high, which will be employed to irrigate the neighboring desert.

The Evansville Edge Tool Works, Evansville, Ind., which has been running eight hours for some time, has begun working 10 hours with its former full force of employes.

The Bass Foundry & Machine Co., Fort Wayne, Ind., recently shipped a jack shaft which, with all its fittings, will total 95,000 pounds, and is the largest section of its kind ever made by the Bass works. The shipment completes the order of a Cambridge, O., firm for a cross-compound Corliss engine of 1,600-horsepower.

The Anderson Commercial Club has completed its factory fund at Anderson, Ind., and will now try to land some new industries for the city by offering substantial bonuses. It was hoped to raise a fund of $50,000, but $54,000 was subscribed. Of the amount $49,600 was raised by a 2 per cent assessment on land values.

The stockholders of the Reading Stove Works, Reading, Pa., recently elected these directors: Daniel F. Printz, James Nolan, W. Harry Orr, W. H. Luden, Thomas Breneiser, Lambert A. Rehr and Edgar Amole. They re-elected President Daniel F. Printz and Secretary and Treasurer Edgar Amole. During the year the company has greatly improved the plant. Modern structures replace old buildings which have been torn down. Three new molding shops were erected, giving a floor space of 180 x 225 feet, and a five-story warehouse was also built.

The Toronto Testing Laboratory, Ltd., Toronto, Ont., has been incorporated and has established an office in the Saturday Night building. The officers are: President, J. D. Stoddard; vice president, W. P. Putnam; secretary, Henry Blumhart, and treasurer and manager, Hugh Lamont. This is a company of analytical and consulting chemists, its specialty being to care for the requirements of iron and steel foundries, steel manufactories, and the assaying of ores. It was formed to look after the Canadian business of the Detroit Testing Laboratory. Mr. Lamont, who will manage the Canadian business, has had many years' experience in handling the analytical work of foundries, and has been connected for the past few years with the Detroit Testing Laboratories.

Trade Notes:—

The Crane Co., Chicago, is establishing a branch at Des Moines, Ia., which will be placed in charge of G. A. Bothwell.

The Western Iron & Supply Co., St. Louis, on April 1 changed its name to the W. G. Hagar Iron Co. The officers and management will remain the same as heretofore.

The Curtis & Co. Mfg. Co., St. Louis, manufacturer of pneumatic machinery and cranes, will establish a New York City branch office May 1, in the Hudson Terminal building, at room 530. A. L. Hoerman will be in charge.

The United Sales Co., recently organized to do general machine and merchandise business in the city of Mexico, has established headquarters for the Cincinnati office at 36 Glenn building, at the corner of Fifth and Race streets.

Homer Bowes, Pittsburg representative of the Austin Mfg. Co., Harvey, Ill., recently sold a 10-ton motor road roller to the county of Allegheny, Pa., to be used on the Allegheny county roads. The roller is gasoline driven. A number of these rollers are in use in various townships and counties in Ohio, Pennsylvania and West Virginia.

H. C. Holthoff, who was formerly associated with the Power & Mining Machinery Co., Cudahy, Wis., will be the manager of the newly established office of the Allis-Chalmers Co. in Mexico City, Mexico. The line of machinery which this new office will be equipped to present and supply includes steam engines and turbines, gas engines and hydraulic turbines, mining, crushing and cement making machinery, electrical machinery, pumps, and transmission machinery. The choice of Mr. Holhoff for this work seems to be a very happy one in view of his long experience and acquaintance with this class of product.

Fires:—

The engine house at the Pioneer furnace, Marquette, Mich., was damaged by fire April 3.

The foundry of King & Walker, Madison, Wis., sustained a loss of about $500, March 30, the loss being covered by insurance.

The rolling department of the Milton Mfg. Co., Milton, Pa., suffered serious damage March 30. The loss is estimated at $75,000.

The tool house of the Woods Run plant of the Pressed Steel Car Co., Pittsburg, was damaged April 8 by fire, which, for a time, threatened the whole plant. The loss will amount to about $10,000.

The second story of the foundry and machine shop at Ripley, O., owned by A. M. Danberry, was badly damaged April 1, including a number of valuable patterns. The loss on the buildings and patterns is $5,000.

Fire damaged the machinery in the plant of the McVoy Tub, Pail & Packing Co., Minneapolis, Minn., April 2. Heat and water caused considerable damage to the machinery, although the flames were quickly extinguished.